Reference 4

MOSELY AND ASSOCIATES, INC.

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AFTER-ACTION REPORT
INCLUDING AIR MONITORING PROGRAM, WATER MONITORING PROGRAM, AND SITE SECURITY PROGRAM

Kennon Site - Brentwood, Tennessee

January 1993
Revised December 1993

AFTER-ACTION REPORT
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INTRODUCTION

INTRODUCTION
Kennon Site - Brentwood, Tennessee

There are three separate documents comprising this After-Action Report:

- **The Mosely & Associates, Inc. After-Action Report** is a notebook which contains the Introduction and Site History, the Air Monitoring Program, Water Monitoring Program, and Site Security Program.

- **The Geraghty & Miller, Inc. Source Control/Remediation After-Action Report for the Kennon Site** is a separate notebook which contains a brief history of the site activity and reviews the source control remediation activities.

- ***The Geraghty & Miller, Inc. Long-Term Soils Management for the Kennon Site Report*** is a separate notebook which contains the soils management program for the site.

BACKGROUND HISTORY OF SITE

BACKGROUND HISTORY OF SITE
Kennon Site - Brentwood, Tennessee

The ten acre site undergoing remediation is located in Brentwood, Tennessee on a 150-acre tract of farmland owned by Emmett and Rose Kennon (See Figure 1). Phosphate was mined on the farmland property between 1972 and 1974, from which one pit was left unreclaimed. In 1978, this mine pit and four additional trenches were used for the disposal of industrial wastes, consisting of organic solvents, adhesives, and organic fillers from General Adhesives, which at that time was a division of Genesco Inc.

Genesco corporate officials learned of the disposal activities in 1985, at which time the Tennessee Department of Environment and Conservation (TDEC), formerly known as the Tennessee Department of Health and Environment (TDHE), was notified and a series of investigations and remedial activities were begun under the supervision and direction of TDEC.

During the initial stage, a silt fence was constructed to prevent contaminated sediment from leaving the property and an alternative water supply was provided to residents in the area. Soil sampling and geophysical surveys were conducted in the disposal areas and monitor wells were constructed on-site by consultant personnel. Domestic wells and springs were sampled by the TDHE, and the US Geological Survey (USGS) conducted a study of the regional ground-water flow system. In 1986, the City of Brentwood extended the city water lines into this area of Williamson County to provide city water to residents in the surrounding area, with Genesco participating in the funding thereof.

Geraghty and Miller, Inc. (G&M) was retained by Genesco to collect and analyze all of the existing data and to prepare a plan of investigation of the site. During 1987, that plan was implemented.

From the data obtained during the site investigation in 1987, it was concluded that the hydrogeologic system at the site is composed of three basic units. The uppermost unit (the shallow aquifer) includes a granular saprolite zone at the base of the weathering residuum and the weathered upper few feet of the bedrock. This is underlain by the Hermitage Aquitard, which is a confining zone. The Carter's Formation, which is the third unit, underlies both the hydrogeologic systems noted above and is a massive limestone formation.

The ground water flow in the shallow aquifer is towards the southwest and is largely controlled by topography. Ground water contamination was found to be restricted to the shallow aquifer and confined to a relatively small area on the Kennon property immediately adjacent to the disposal area. Based upon the data collected, it was determined that it was unlikely that any contaminants had migrated off of the Kennon property.

Work plans, investigation reports and remedial design documents were prepared during 1986 to 1990 to address the on site contaminants, and were implemented in 1989 through 1991. The site is being remediated in accordance with TDEC order, No. 86-3013, issued March 5, 1986. A Hazard Evaluation and Remedial Alternatives (HE&RA) study was conducted to identify the media of concern (ground water, adhesive waste, contaminated soils) and the optimum treatment and disposal alternatives.

The selected ground water remedial method was Remedial Alternative 1 of the HE&RA, which was comprised of a subsurface drain (See Figure 2). The subsurface collection drain was designed and installed in November 1989 to intercept the flow of ground water (See Figure 3). Intercepted ground water is removed from the site and treated through the City of Brentwood sewer system at a treatment facility operated by the Metropolitan Government of Nashville and Davidson County.

The selected source control remediation method was outlined in the G&M Source Control Plan of May 1989. The TDEC approved the Source Control Plan in April 1990 and it was implemented during the period of July 1990 through June 1991. Large mechanical screens were used from June 1990 to September 1991 to separate semi-solid and solid adhesive wastes from the soils. Excavated adhesive wastes were removed from the site and incinerated. The remaining soils were processed through the screens several times prior to the bioremediation phase of the project.

A treatability study was conducted by G&M at the site in 1990. The study determined that an adapted indigenous aerobic bacteria population was present in the soils which could be used to convert the residual contamination present in the soils to carbon dioxide.

Baseline soil sampling was conducted in 1990 and 1991, and the site was terraced into a series of surface water holding cells in order to promote the bioremediation effort (See Figures 5 and 6).

Soil and ground water sampling takes place on a scheduled basis to ensure that bioremediation continues in an effective manner.

Bioremediation is anticipated to continue until approximately the year 2002, but closure of the site will not be completed until a comprehensive sampling analysis has been conducted to ensure that the soil and ground water cleanliness meets the applicable regulations.

FIGURE 1

GERAGHTY & MILLER, INC.

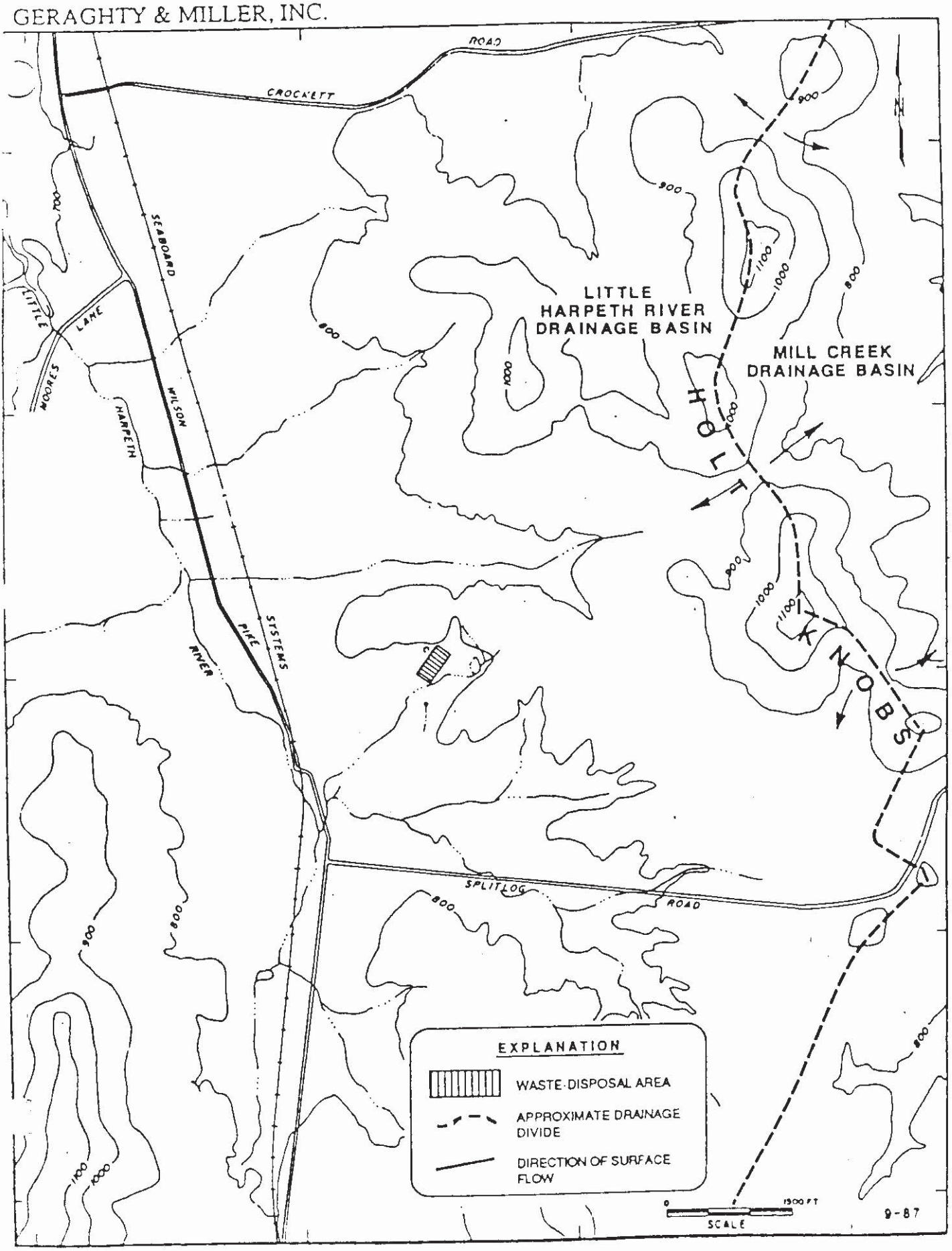
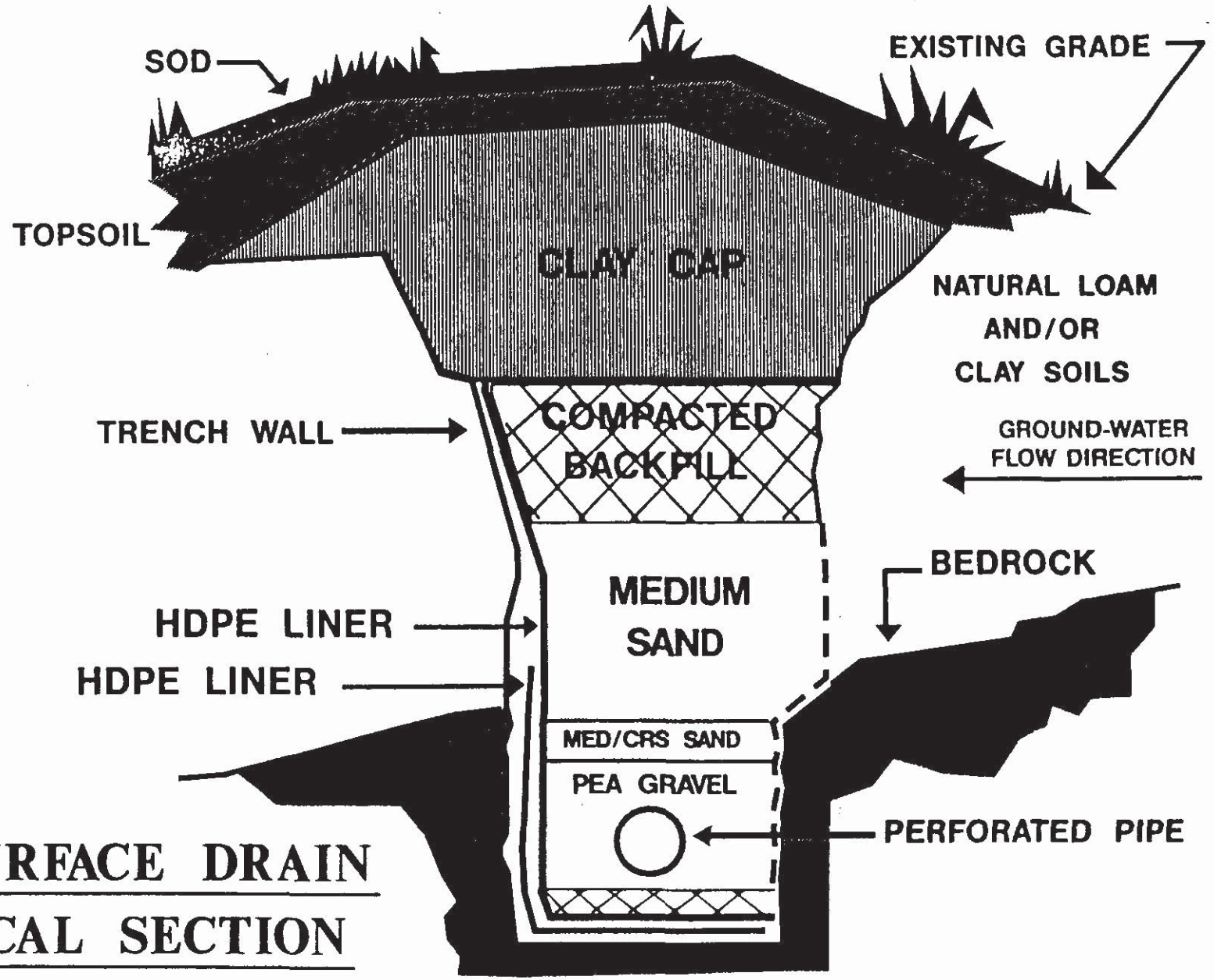


FIGURE 2



SUBSURFACE DRAIN
TYPICAL SECTION

FIGURE 3

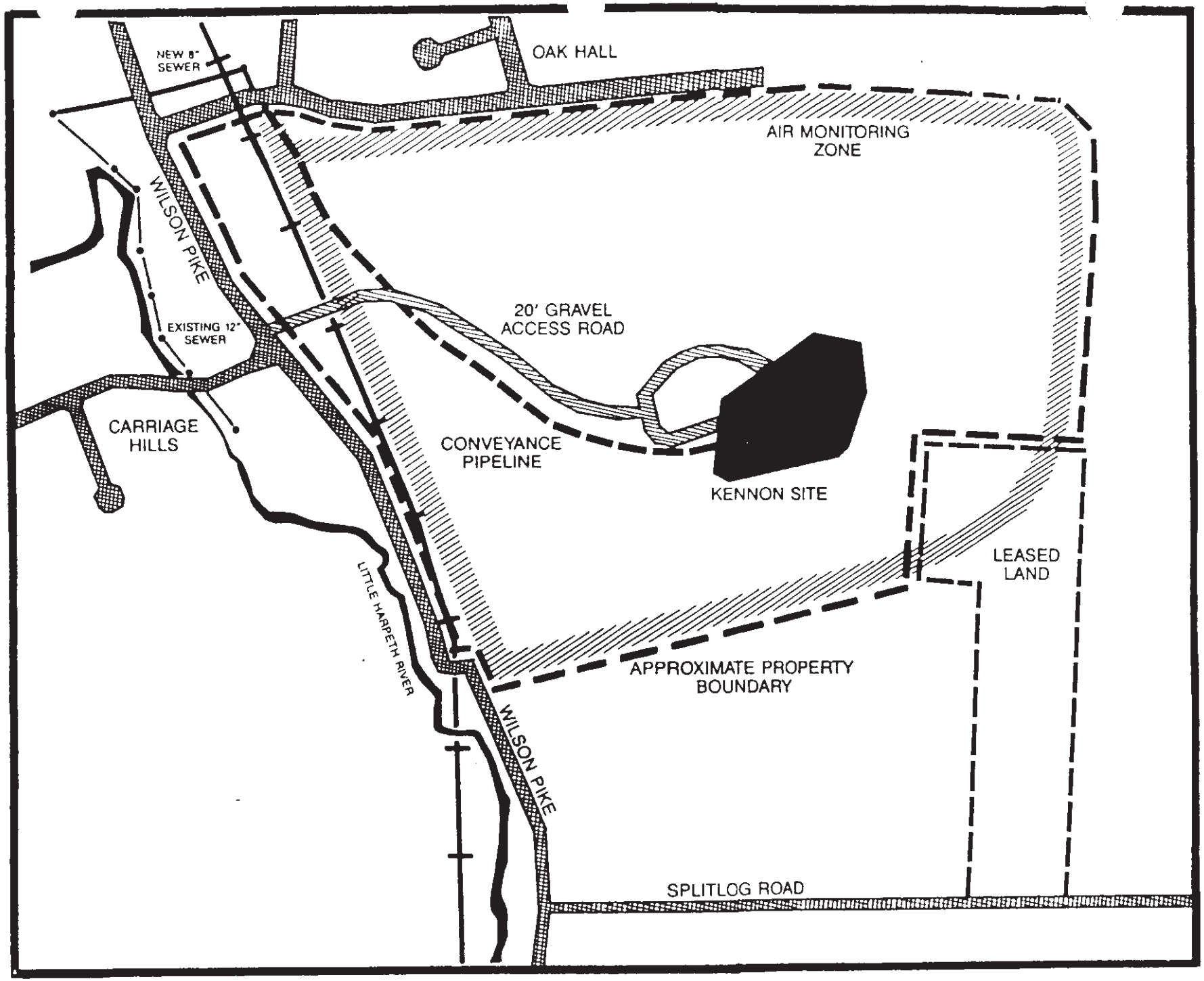

NEW 8" SEWER
OAK HALL
AIR MONITORING ZONE
WILSON PIKE
EXISTING 12" SEWER
20' GRAVEL ACCESS ROAD
CARRIAGE HILLS
CONVEYANCE PIPELINE
KENNON SITE
LEASED LAND
LITTLE HARPETH RIVER
APPROXIMATE PROPERTY BOUNDARY
WILSON PIKE
SPLITLOG ROAD

FIGURE 4

REMOVAL OF SOURCE MATERIAL

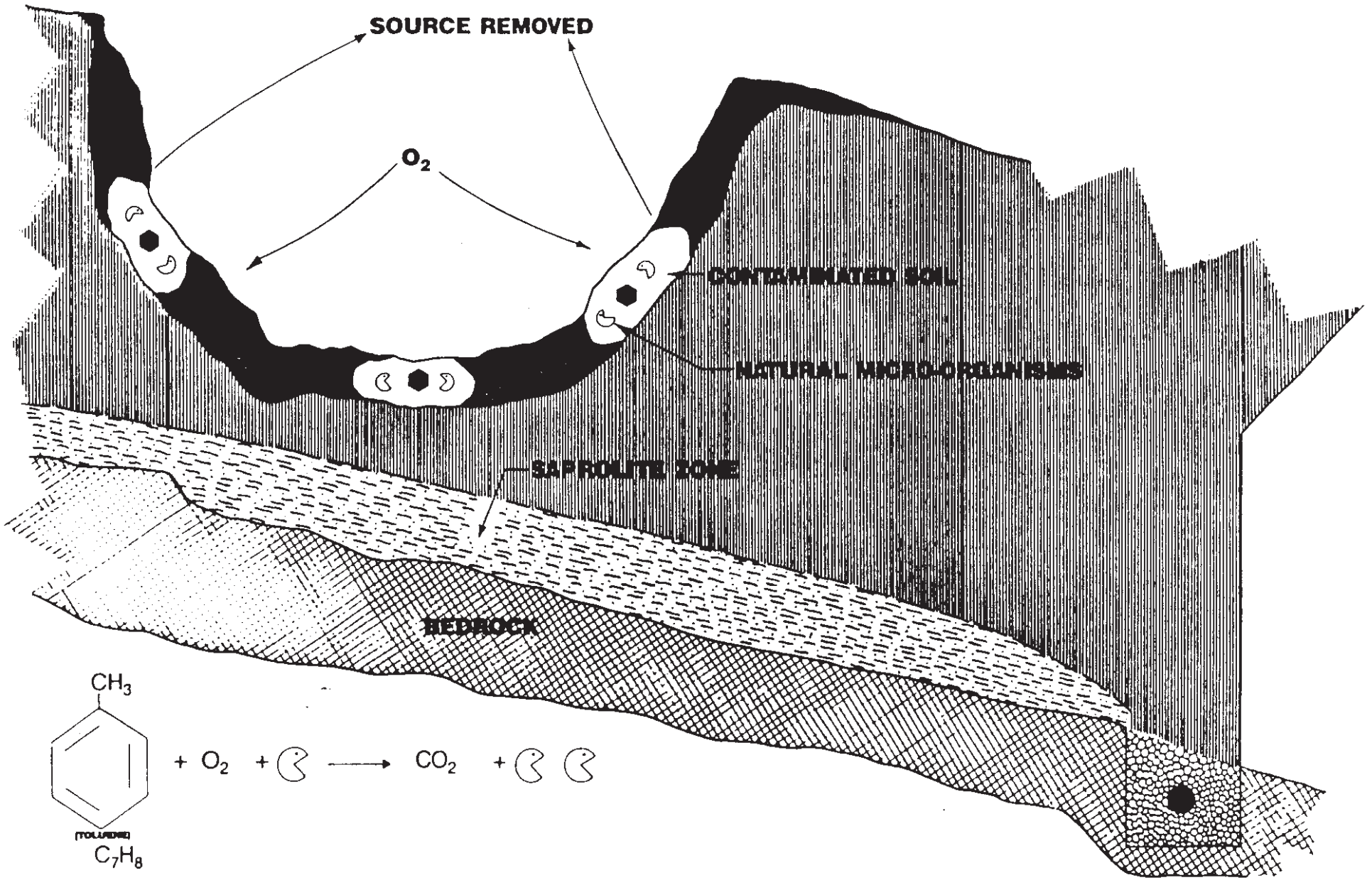


FIGURE 5

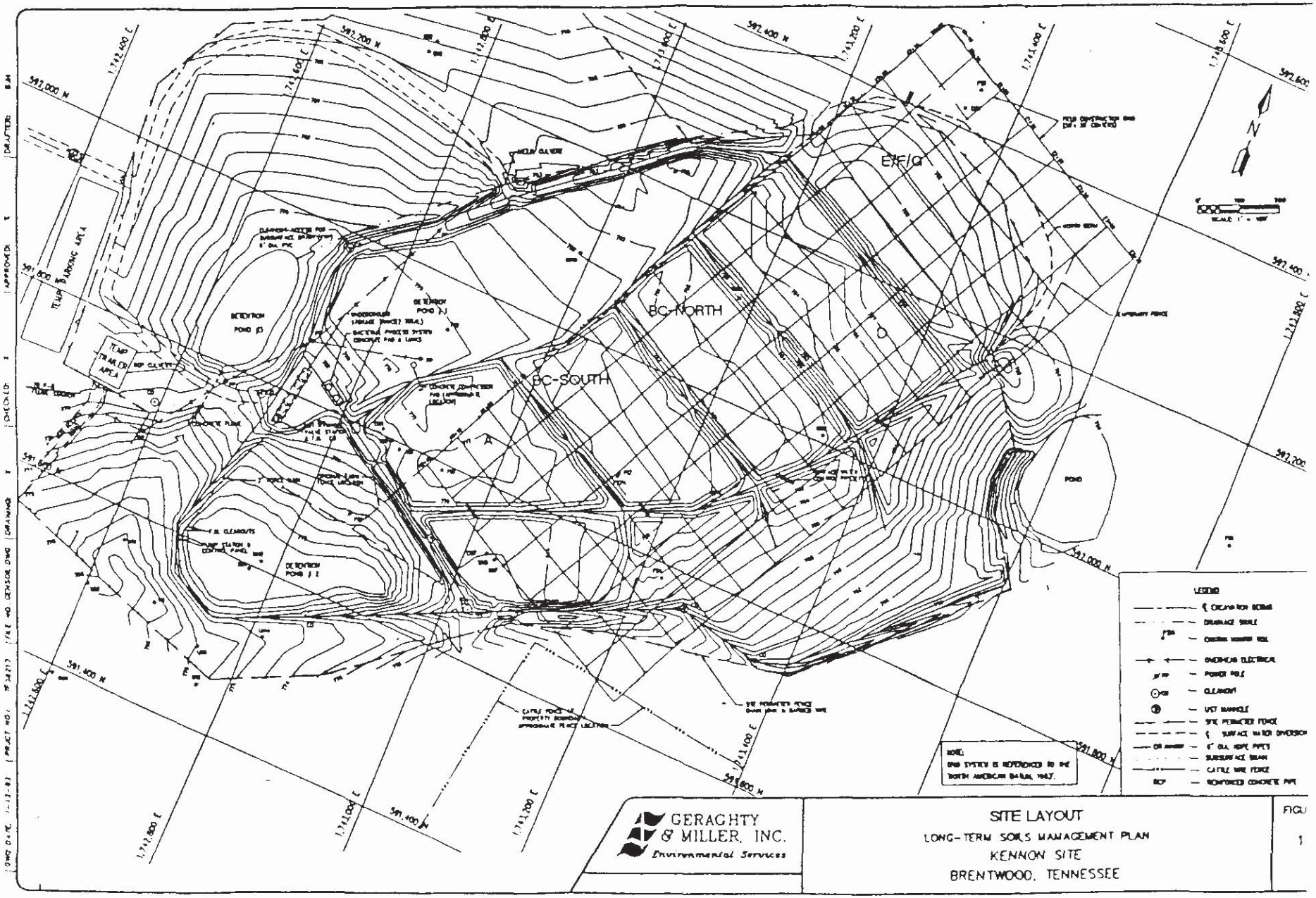
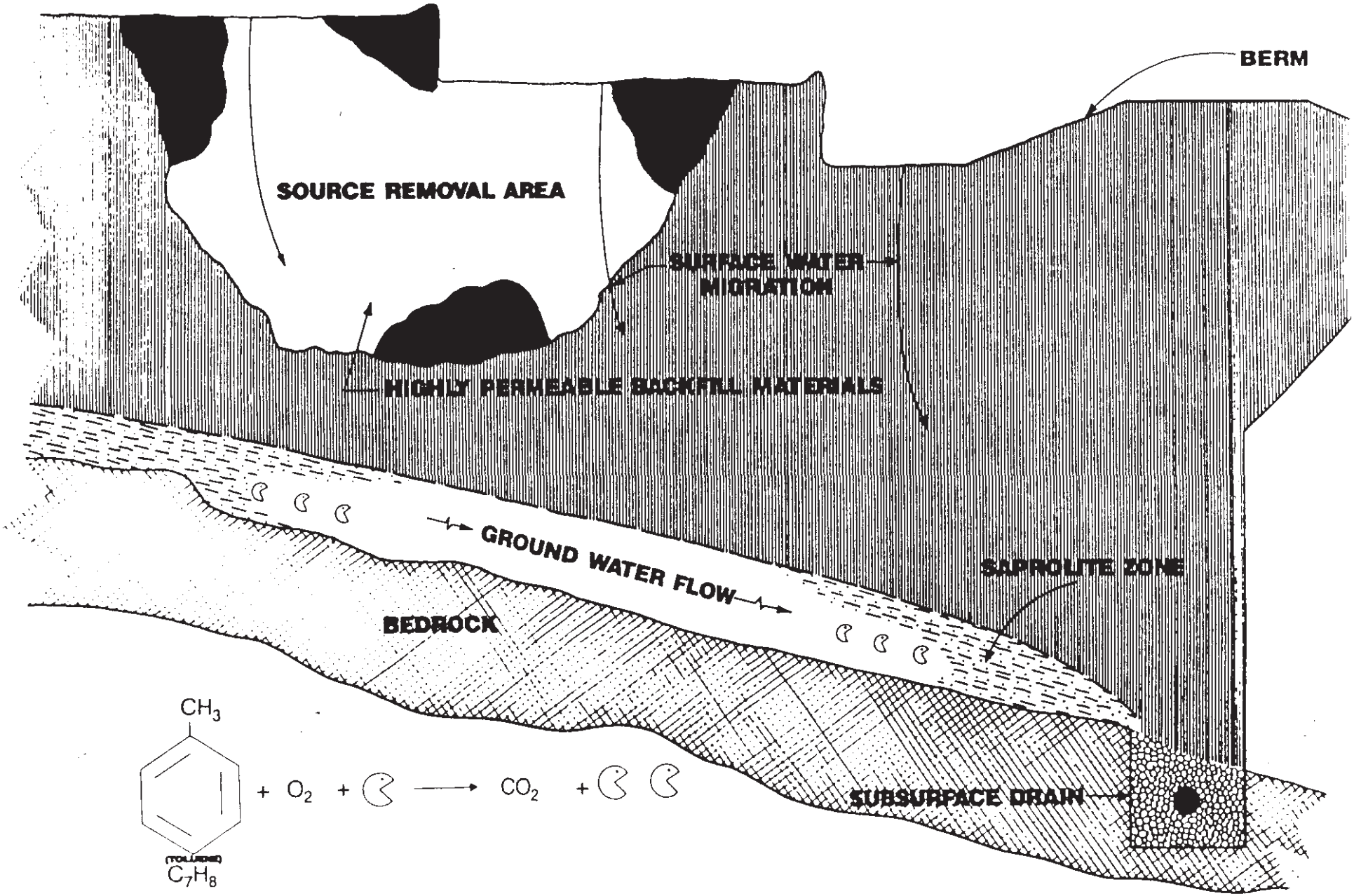

BC-NORTH
BC-SOUTH
E/F/G
N
LEGEND
NOTE:
SITE LAYOUT
LONG-TERM SOILS MANAGEMENT PLAN
KENNON SITE
BRENTWOOD, TENNESSEE
GERAGHTY & MILLER, INC.
Environmental Services

FIGURE 6

TERRACING PROMOTES PONDING AND INCREASES FLOW THROUGH THE SOILS



ANTICIPATED O&M COSTS AT SITE

KENNON SITE - BRENTWOOD, TENNESSEE

Future Cost Projections

FYE 95 Through FYE 2001 - As of February 9, 1993

I. LONG-TERM COSTS FROM FEBRUARY 1994 - FYE 2001	
Geraghty & Miller, Inc.	
Annual Costs for Bioremediation, Soil Sampling and Laboratory Analysis @ $8,000/yr x 7 yrs.	$ 56,000
Bi-Annual Bioremediation/Soil Treatment ($5,000/application - Incl. contractor x 4 applications)	20,000
Soil Re-Working - Est. in FYE 97 (incl. contractor)	30,000
Mosely & Associates, Inc.	
Air & Water Sampling/Regulatory Liaison @ $20,000/yr x 7 yrs	140,000
Operations & Maintenance (incl contractor @ $8,000 every other year x 3 yrs)	24,000
TDEC Cost Allocation ($60,000 - January 95 Payment)	*60,000*
Other Miscellaneous Costs	
Sewer, Utilities, Etc. @ $18,600/yr x 7 yrs	130,200
II. SITE CLOSURE COSTS - APPROX. FYE 2001	
Decontamination of Subsurface Systems (M&A and G&M)	50,000
Certifications for Meeting TDEC ARAR's	50,000
Final Closure Report (G&M)	20,000
Regulatory Liaison (M&A)	30,000
TDEC Cost Allocation (NOTE: Majority of TDEC cost will have already been previously paid)	30,000
FUTURE TOTAL LONG-TERM COSTS	$ 640,200

ANNUAL REPORT INFORMATION

ANNUAL REPORT INFORMATION
Kennon Site - Brentwood, Tennessee

An annual report will be prepared each year summarizing the yearly events including the sampling and soils management activities. Included will be an estimate of the volume of ground water treated and the annual expenditures. Two copies of this report will be submitted to the Division of Superfund (DSF) by March 1st of each year.

The first such report is due March 1, 1994, covering the activities for the calendar year 1993.

LONG-TERM TREATMENT CRITERIA

LONG-TERM TREATMENT CRITERIA
Kennon Site - Brentwood, Tennessee

A necessary omission from the Long-Term Soils Management Program is the reporting of risk-based soil and groundwater Applicable or Relevant and Appropriate Requirements (ARAR's), which are sometimes set by the appropriate regulatory authority as a "level of cleanliness" to which the on-site groundwater and soils are compared when de-listing of the site occurs.

Since the United States Environmental Protection Agency (EPA) has not yet determined the ARARs for sites undergoing remediation, it was felt by TDEC, Genesco and the consultants that the specification of an ARARs number for the soils and groundwater would be premature and somewhat arbitrary. The U.S. EPA continues to develop the ARARs Program and is expected to publish ARARs guidelines well before the bioremediation activities at the site are completed. After each five year period, the bioremediation system's effectiveness in achieving treatment goals through the bioremediation program will be evaluated by comparison with ARAR's published by EPA or TDEC.

AIR MONITORING PROGRAM

AIR MONITORING PROGRAM
Kennon Site - Brentwood, Tennessee

Four tasks concerning air monitoring were accomplished on the Kennon site to obtain data concerning the possibility of airborne contaminants from the removal/remediation operations which were being conducted in 1990 and 1991. The air monitoring was accomplished in conjunction with the utilization of a comprehensive weather station located at the site, which measured the barometric pressure, outside temperature, relative humidity, wind direction, and wind speed. This information was accumulated on a continuing basis, during the periods when all source removal/remediation operations were actually conducted.

Perimeter Monitoring

Ten air monitoring stations, located around the property boundary of the Kennon farm, were equipped with 3M passive monitors to detect airborne organic vapors. The monitors were housed in specially-designed air monitoring stations, constructed of untreated redwood and galvanized screen mesh, to protect the monitors from the elements and wildlife. Photographs of the sampling stations, and a location map, are included as attachments to this document.

Monitors were changed out on a weekly basis during the active source removal phase, and on a bi-weekly basis during inactive source removal activities. The monitors were immediately labeled, sealed, and shipped to the Clayton Environmental Laboratories in Novi, Michigan, for a gas chromatograph hydrocarbon scan to determine the total level of hydrocarbons present. Gas chromatography mass spectraphotography analyzation was available in the event that the levels of the total hydrocarbons, on a cumulative, time-weighted average basis, exceeded a level indicative of the presence of hydrocarbons in excess of background levels.

Also included within this document are the results of each of the individual laboratory tests. The total hydrocarbons found on the sample itself, as well as the time-weighted average of milligrams per cubic meter (mg/M^3) are reported. At no time were background levels exceeded, showing that no harmful levels of organic vapors crossed the boundaries of the farm. The trace levels that were occasionally reported were attributed to large deposits of cow manure found in the immediate vicinity of the respective monitoring station.

Work Area Detection Alarms

Three Thermoelectron Organic Vapor Monitors (OVMs), which are sophisticated electronic monitoring instruments, were placed in special weather-tight enclosures, were equipped with radio alarm systems and were used daily during the construction process when source material was bought to the surface of the ground. They were placed upwind and downwind from the work area to pick up levels of organic vapors

which might be drifting towards the property line. Should the readings be over a pre-set alarm level (four parts per million [ppm]) the alarm would trip, a radio signal would be sent to the Mosely & Associates site trailer weather station, and an investigation would immediately take place to determine the cause of the indicated high level. In most cases, the alarms came from exhaust fumes from construction or farm equipment. In those isolated cases where the alarm limit was exceeded due to on-site removal activity which did not exceed 10 ppm, immediate steps were taken on-site to contain or remove the generating source.

Daily Air Samples

During the excavation phase of the project, air samples were taken in the source removal area to insure that the source removal activities generated no airborne contaminants in the construction area at the site which may be too small to be noted by other instruments, but which might accumulate over the work day to a level which may be of concern to site workers.

SKC Air Monitoring pumps installed with charcoal tube collection media were mounted approximately five feet above ground in the North, East, South, and West quadrants surrounding the construction area at the site. A fifth pump and charcoal tube was set out in the middle of the construction area.

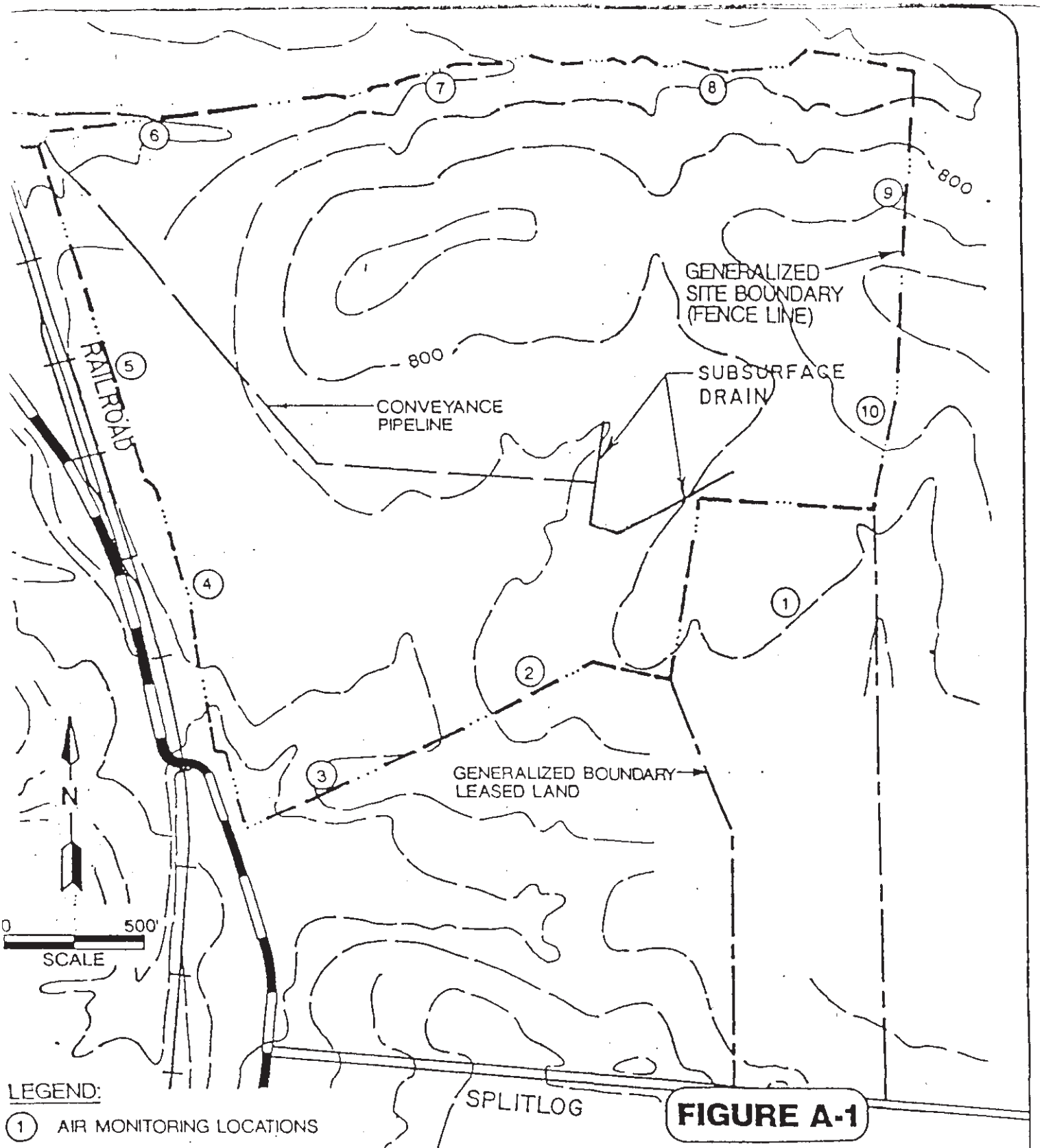
Each day while source removal activities were underway at the site, five air samples, plus laboratory and/or field blanks were taken in accordance with OSHA, EPA, NIOSH, and AIHA methodology and were sent to Clayton Environmental Laboratories in Novi, Michigan for analysis. This laboratory is accredited by the American Industrial Hygiene Association (AIHA) for this type of analyses.

The attached data shows the results both as the total milligrams of hydrocarbons found in the sample (mg) and a Time-Weighted Average (TWA) in mg/M^3. In all cases, no time-weighted average organic vapors were present in the construction area in an amount sufficient to cause concern regarding worker or nearby resident health and safety.

Direct Reading Instrumentation

Organic Vapor Monitors and/or Organic Vapor Analyzers (sophisticated, state-of-the-art industrial hygiene instruments), were used continually while excavation activities were taking place. These analyzers enabled Mosely & Associates, Inc. and contractor health and safety personnel to monitor levels of airborne vapors for worker and resident safety during excavation activities. This permitted sources of organic vapors to be covered, contained or treated to prevent the large scale release of those vapors.

These instruments were also used to assist in the qualification and identification of source materials for the presence of organic vapors, and to assist, along with soil and water samples, in the qualification of backfill material.



LEGEND:

(1) AIR MONITORING LOCATIONS

FIGURE A-1

DRAWING NO: FL01014-SR1	
DRAWN BY: Ken Sloan	DATE: May 31 1989
CHECKED: C. Duncan	DATE: May 31, 89
APPROVED: L. PERSINGER	DATE: MAY 31

GERAGHTY & MILLER ENGINEERS, INC.

APPROXIMATE AIR MONITORING LOCATIONS

KENNON SITE
BRENTWOOD, TENNESSEE

WATER MONITORING PROGRAM

WATER MONITORING PROGRAM
Kennon Site - Brentwood, Tennessee

Three separate documents previously submitted to TDEC govern the water monitoring procedures at the Kennon site, their requirements, and the requisite quality assurance procedures, and are reported as a part of the Groundwater Monitoring Plan, January 1993. These documents are described below:

1. City of Brentwood Sewer Permit: This permit, issued initially on June 1, 1990, renewed on June 1, 1992, and currently expiring on May 31, 1994, requires compliance with Metro Ordinance No. 080-343, which governs wastewater discharge into the sewer system for the Metropolitan Government of Nashville and Davidson County, and into the City of Brentwood sewer system. A copy of the Permit and related requirements is included as Appendix 2 in this section.

2. Groundwater Monitoring Plan - Geraghty & Miller, Inc., November 1988: This document covers the initial groundwater monitoring well installation and monitoring of those wells throughout the life of the project. It was previously submitted to the TDEC and approved by them prior to the beginning of the Groundwater Monitoring Program.

3. Water Sampling Plan, Mosely & Associates, Inc., May 1990: This plan combined the monitoring requirements from the above two documents, and included increased monitoring procedures for the Source Removal Phase of the project in 1990 and 1991. It was previously submitted and approved by TDEC.

Groundwater Monitoring Plan, Mosely & Associates, Inc., January 1993: This Water Monitoring Plan incorporates all of the quality assurance, sampling, and analytical requirements of the above three documents by reference into this Water Monitoring Plan, and contains the combined water sampling schedule until the site is de-listed by the Tennessee Department of Environment and Conservation. This plan was initially submitted to TDEC in January 1993 and was updated in December 1993 and is included in its entirety in this section of this report.

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GROUNDWATER MONITORING PLAN
KENNON SITE
BRENTWOOD, TENNESSEE
JANUARY 1993

Revised December 1993

GROUNDWATER MONITORING PLAN
KENNON SITE
BRENTWOOD, TENNESSEE
JANUARY 1993
REVISED DECEMBER 1993

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GROUNDWATER MONITORING PLAN
KENNON SITE
JANUARY 1993
Revised December 1993

1.0 PROJECT DESCRIPTION

Mosely & Associates, Inc. has been retained by Genesco Inc. to provide environmental safety management services in connection with the Kennon site, located near Wilson Pike In Brentwood, Tennessee. One of the specific services of our environmental activities is to collect and arrange to have analyzed samples of groundwater and/or wastewater that is, or may be, conveyed to the City of Brentwood sewer system.

This document reviews the sampling and quality assurance procedures to be taken In accomplishing this task.

Wastewater sampling and analysis is being accomplished for three different phases of the Kennon site project:

1. MONITOR WELL SAMPLING: This activity is provided relative to the "GroundWater Monitoring Plan for the Kennon Site, Brentwood, Tennessee, November, 1988", which was prepared by Geraghty & Miller, Inc., Oak Ridge, Tennessee. This plan was approved by TDEC and sets forth the sampling and quality assurance procedures for monitoring the groundwater quality of selected previously-installed monitoring wells inside and outside the bermed area on the Kennon property.

   Under this program, sampling is performed on selected monitoring wells on a quarterly basis and the sample results are submitted to the TDEC.

2. CITY OF BRENTWOOD SEWER SAMPLING: Specific wastewater sampling for sewer discharge is required by the City of Brentwood Department of Water and Sewerage Services Permit No. 89-001 for the Discharge of Industrial Wastes, issued to Genesco Inc. on June 1, 1989.

   Discharge to the sewer is in the form of groundwater collected through the subsurface drain system at the Kennon site, and potentially may contain trace levels of volatile organic compounds (VOC's). A baseline sample and analysis for the priority pollutants - volatiles, and the full "Metro" list is collected and analyzed annually. The priority pollutants list for volatiles is collected and analyzed on a quarterly basis. Beginning In 1994, an analysis for flow, BOD_5, SS, oil and grease, pH, ammonia, iron, zinc, cadmium, and magnesium will also be accomplished on a semi-annual basis, to comply with requirements Imposed upon the city of Brentwood by Metro. Results are sent to both the City of Brentwood and to TDEC.

3. SOURCE REMOVAL PHASE - GROUNDWATER DISCHARGE MONITORING PROGRAM: Beginning in the late Spring of 1990, Genesco Inc. entered into the Source Removal/Soil Remediation Phase of the Kennon project. In this phase, groundwater and decontamination rinsate that was collected on site was processed through a solvent-water separator and/or process control unit for use in the soil remediation/bioremediation activities. Excess groundwater was discharged to the City of Brentwood Sewer System. Increased sampling frequency and quality assurance steps for groundwater monitoring were required during that particular phase of the Kennon Site remediation project. The results were sent to both the City of Brentwood and to TDEC.

1.1 BACKGROUND INFORMATION

Groundwater monitoring through both the Monitor Well Sampling and Sewer Discharge Programs has been accomplished for several years on this project. Sample results from both programs indicate that contaminants are not present in the monitor wells or sewer discharge, except for trace levels of a few volatile organic compounds. All trace levels of volatile organic compounds found were considerably lower than limitations set forth in the City of Brentwood or Metropolitan Government of Nashville and Davidson County Sewer Use Ordinances.

2.0 SAMPLING and QUALITY ASSURANCE PROCEDURES

This section presents the scope and the methodology of sampling activities to accomplish this project. The primary quality assurance objectives for the sampling procedures are : (a) that the samples obtained are representative of the total wastewater stream into the sewer; (b) that a sufficient amount of the sample is taken so that the appropriate analyses may be accomplished by the analytical laboratory; (c) that the proper handling and preservation procedures are followed to maintain the integrity of the sample; and (d) that the sampling procedures are well documented.

References for sampling procedures that will be used include:

(1) NPDES Compliance Sampling Manual, U.S. Environmental Protection Agency, Office of Water Enforcement, October 1979.

(2) Sampling Procedures for Hazardous Waste Streams, deVera, et al.

(3) Safety Manual for Hazardous Waste Site Investigations, U.S. Environmental Protection Agency.

(4) NIOSH Manual of Analytical Methods, Third Edition, National Institute of Occupational Safety and Health, U.S. Department of Health, Education and Welfare, February, 1984.

(5) Methods for Chemical Analysis of Municipal and Industrial Wastewater, U.S. Environmental Protection Agency, EPA-600/482-057.

(6) Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, National Institute for Occupational Safety and Health, NIOSH-85-115.

2.1 SAMPLING SAFETY

The Health and Safety Plan, prepared for the Kennon site by Geraghty & Miller, Inc. and contained in the Groundwater Monitoring Plan of November 1988, is used as a guideline for safety procedures to be implemented and followed during sample collection, and includes the following considerations: (a) respiratory protection where required for collecting samples of suspected high concentrations of hazardous materials; (b) protective clothing which may be required during the sampling procedures; (c) contingency plans for emergencies, including a list of telephone numbers for ambulance service, hospital, fire department, police department and poison control; and directions to the nearest medical facility. The necessary protective clothing and safety procedures will be determined by the Site Health and Safety Officer (SHSO) before sampling activities begin.

2.2 SAMPLING SCHEDULES

The sampling schedules for the three (3) water sampling programs at the Kennon site are set forth below:

2.2.1 SAMPLING SCHEDULE - MONITOR WELLS - KENNON SITE

Sampling for Priority Organic Pollutants - Volatiles is accomplished on a quarterly basis at selected monitoring wells, in compliance with the TDEC-approved GroundWater Monitoring Plan published in November, 1988. This list for volatiles is the same as those listed under EPA's Total Toxic Organic-Volatiles list. Sampling and analysis for the full EPA Priority Pollutants list, less pesticides and PCB's, is accomplished at those specified monitoring wells on an annual basis, in conjunction with the sampling and analysis for volatiles for that particular quarter. This is normally accomplished in the fourth quarter of each calendar year.

2.2.2 SAMPLING SCHEDULE - CITY OF BRENTWOOD SEWER SAMPLING

Genesco's sewer discharge permit requires semi-annual sampling and analysis for flow, biochemical oxygen demand (BOD), suspended solids, oil and grease, pH, ammonia, iron, zinc, cadmium and magnesium. In addition, the City of Brentwood verbally requested that the quarterly analysis for volatiles, which is accomplished at the City of Brentwood sewer inlet (Manhole "X"), be provided to them. They likewise have requested that the annual analysis for the sample collected for TDEC at Manhole "X" and analyzed for the full Priority Pollutants List (less pesticides and PCB's) be provided to them. This request has also been, and will continue to be, honored. As previous samples have shown no detectable amounts of these materials, this analysis will be performed annually, will be called the Comprehensive Sample and Analysis, and will include the analysis for parameters collected on a quarterly basis, as outlined below, as well. Should the comprehensive sample taken on an annual basis show a constituent above the regulatory limit, the source will be identified, where possible, and that particular constituent, or class of constituents, will be sampled on a quarterly basis until two consecutive quarterly analyses show that parameter not exceeded.

On a quarterly basis, samples will be collected and analyzed for volatile organics priority pollutants (see attached listing) to ensure that the trace amounts previously found stay well within the criteria for discharge into the City of Brentwood sewer system. These will be analyzed utilizing EPA test method 8240 by a laboratory certified by the State of Tennessee for wastewater analysis.

2.2.3 SAMPLING SCHEDULE - SOURCE REMOVAL PHASE - GROUNDWATER DISCHARGE MONITORING PROGRAM

1. **BASELINE ANALYSIS:** Previous groundwater monitoring on the site has shown no detectable amounts of metals, pesticides, PCB's or cyanides. Also, levels of Biological Oxygen Demand, 5-day (BOD_5), Chemical Oxygen Demand (COD), oil and grease, suspended solids, or pH recorded have not caused a concern over water quality to be discharged into the City of Brentwood sewer system. Only small amounts of certain volatile organic compounds have been found in the groundwater, all of which are projected to easily meet the City of Brentwood/Metropolitan Government of Nashville and Davidson County (METRO) criteria.

   During the Source Removal Phase of the site remediation project (from November 1990 through January 1991, and again from April through October 1991, to verify the groundwater quality, a Baseline Sample was collected on the first day that source material was excavated. The Baseline Sample included a laboratory analysis for the parameters shown in the attached table (see the Water Monitoring Results following in this section of this report) and was performed by a laboratory certified by the State of Tennessee for *performing wastewater analysis.*

2. **MONTHLY ANALYSIS of GROUNDWATER DISCHARGE:** The Baseline Analysis was repeated monthly to ensure that wastewater quality for all baseline parameters remained within the City of Brentwood and METRO limits.

3. **WEEKLY ANALYSIS - VOLATILE ORGANICS:** Since trace amounts of volatile organic compounds have previously been found in the groundwater discharge from this site, samples for the Organic Priority Pollutants - Volatiles, were collected on a weekly basis when excavation was being accomplished to ensure that the sewer discharge remained within the City of Brentwood/METRO limitations.

4. **SAMPLING METHODOLOGY:** Because of the potential presence of Volatile Organic Compounds in the site wastewater, grab samples were collected for all analyses.

5. **SAMPLING SCHEDULE TABLE:** The attached table (see the Groundwater Monitoring Schedule for the Kennon Site following in this section of this report) presents the above sampling schedule and results in tabular form.

2.3 SAMPLING EQUIPMENT

Sampling equipment necessary for the collection of representative wastewater samples for all sampling programs is presented below:

1. Several gallons of distilled water and properly cleaned wash bottles
2. Plastic sheeting or large size garbage bags
3. Bottom filling Teflon or stainless steel bailer with appropriate nautical rope lengths
4. Graduated, glass or Teflon sample collection and quantification containers
5. Appropriate laboratory-prepared sample containers
6. Sample bottle labels, waterproof marking pen
7. pH meter

8. Thermometer
9. Specific conductivity meter
10. *Preservatives for water samples (unless already in sample containers)*
11. Field data forms, clip board, pen
12. Ice chest and ice or freezer packs
13. Steel measuring tape
14. Flashlight
15. Appropriate collection/holding/reach equipment
16. Clean rags or wipes
17. Laboratory grade detergent

2.4 FIELD ANALYSIS PROCEDURES - ALL SAMPLING PROGRAMS

Analyses of pH, temperature and specific conductance will be made in the field at the time of the sampling because these parameters can change rapidly after the sample is collected. Enough water will be removed from each sampling point to determine the temperature of the water, specific conductivity, and pH. These values will be recorded on a field data sheet and the surplus water dispensed in such a manner so as to avoid potential contamination. Instruments will be calibrated before and after sampling to ensure that the sample collected is representative of the aquifer at that point, or of the wastewater flow.

Samples for volatile organics will be taken in VOA vials and properly filled and inverted to insure the absence of air in the sample container.

Other containers as specified by the Metropolitan Government of Nashville and Davidson County and/or the City of Brentwood will be utilized, where directed. Immediately after the sample is collected with either a bailer or with another type sample collection device, it will be transferred to the sample containers containing the appropriate preservatives.

2.5 SAMPLE COLLECTION METHODS

Sampling will be conducted in the sewer man-hole, monitoring well or lift station as specified by the sampling plan. Sample collection containers or a bailer are to be used to obtain the sample which will then be poured into the laboratory-supplied container. Such collection container or bailer will be decontaminated as specified below prior to sample collection. A "clean capture" methodology will be used to prohibit contamination of the collection container from the walls of the sewer pipe, flume or holding tank itself.

For monitoring well samples, a stainless steel or Teflon bailer will be utilized for purging approximately three well volumes of standing water in well casings, as well as for the collection of the sample itself. The pH and specific conductance of the purged water will be tested periodically to ensure that the sample is representative of the aquifer and is not affected by the conditions at the well. If consistent readings of these parameters are obtained over the purging period, it will be assumed that the evacuation of standing water in the well is adequate.

The VOC sample will be collected with the same bailer used for purging the well, and bailers will be carefully decontaminated as specified below between each sampling location.
For monitoring sewer discharge samples and process tank samples, either a stainless steel or

Teflon bailer or special glass or stainless steel collection container will be used for collecting the wastewater or sewer samples. Samples will be poured from the collection containers into the sample containers without making direct contact between the two vessels. Sample containers will be immediately labeled and appropriate notations made in the Water Sampling Log as shown in this section of this report.

2.5.1 DECONTAMINATION PROCEDURE

Bailers and other sample collection containers will be rinsed with tap or distilled water, washed with a laboratory-grade detergent solution, rinsed with distilled water, and allowed to air dry. The bailers and other sample collection containers will be wrapped in aluminum foil for transportation between sample locations. The use of organic solvents such as acetone or isopropyl alcohol for decontamination will not be utilized due to the risk of introducing false positives into the analysis protocols.

2.6 SAMPLE PRESERVATION

The attached table (immediately following this section of this report) presents the wastewater sampling and testing considerations, including the type and quantity of preservatives, for a wide range of constituents which include those being sampled at this location. In most cases, the containers are prepared by the analytical laboratory and the preservatives also furnished by them for the specific sampling being accomplished. Samples will be maintained at the required temperature by transporting them in special containers which contain either ice or ice packs specifically made for such refrigeration purposes.

2.7 FIELD BLANKS, RINSATE BLANKS, DUPLICATES, SPLITS

The following information applies to the use of field blanks, rinsate blanks, duplicates and splits, for all sampling programs.

2.7.1 FIELD BLANKS

One (1) Field Blank will be obtained during each daily sampling event for Volatile Organic Compounds, by pouring laboratory-supplied, purged water for VOA sample blanks into a VOA vial. It will be labeled, handled and transported with the other VOA samples collected that day. The laboratory will perform the same analysis on the VOA Field Blank as the other VOA samples collected, to determine if contamination of samples in transportation or a systematic laboratory error may have occurred.

2.7.2 RINSATE BLANKS

Where sample collection containers or a bailer is used at more than one sample location during a daily sampling event, one sample of the rinsate from that container or bailer will be collected in a VOA vial and will be analyzed with the other samples, to determine if the decontamination process adequately cleaned the sample collection container or bailer. If more than one decontamination method is used, or more than one supply of laboratory-grade detergent is utilized in the decontamination process, a rinsate blank will be obtained each time the method or detergent is changed.

2.7.3 DUPLICATES

Each VOA sample will be collected in duplicate VOA vials, to allow for a margin of error in either

sampling or laboratory personnel's handling of VOA vials. If the first VOA vial is successfully analyzed, its duplicate will not be analyzed.

2.7.4 SPLITS

If samples are to be split with a regulatory agency or other authorized personnel, both samples will be collected at the same time and will be marked or tagged so that each may be identified as a split of the other.

If different sample collection containers or bailers are utilized to obtain the samples, both parties' Water Sampling Logs will be noted as such.

3.0 SAMPLE DOCUMENTATION

The following sets forth the sample documentation criteria.

3.0.1 FIELD SAMPLE MEASUREMENTS

The field samples to be collected can be classified into two categories: (a) In-situ measurements, and (b) laboratory measurements:

1. IN-SITU MEASUREMENTS:
   These measurements are made immediately after the sample has been collected. The data will be recorded directly onto the Water Sampling Log form as shown in the attached Exhibit 2-1, along with identifying information on sampling conditions and location. In-situ measurements include the following: pH, temperature and conductivity.

2. LABORATORY MEASUREMENTS:
   Samples collected and preserved in the field to be shipped to the appropriate laboratory for chemical analyses are specified as laboratory measurements. Identifying information on sampling
   conditions and location of sample will be recorded as indicated above, together with a record of the required analyses for each of the samples collected.

3.0.2 CHAIN-OF-CUSTODY

Documentation of sample custody is an important part of field and laboratory operations when samples are needed for regulatory agencies or for litigation. Chain of custody procedures will document sample possession from the time of collection to disposal, in accordance with guidelines established in the EPA Safety Manual for Hazardous Waste Site Investigations (September, 1980). In order to document sample custody, the following Chain of Custody procedures will be followed. For the purpose of these procedures, a sample is considered in custody if it is:

(1) in actual possession of the responsible person;

(2) in view, after being in physical possession;

(3) locked so that no one can tamper with it, after having been in physical custody or possession; or

(4) in a secured area, restricted to authorized personnel.

Each field sample collected will be identified by a sample tag or label on the container itself which is filled out using water-resistant ink. Included on the tag or label, which is usually supplied by the laboratory, are the sample identification number, date, time and location of sample collection, designation of the sample (whether grab, pumped, or composite), the type of sample and preservative, if any, and any pertinent remarks. The signature of the sampler will also be included on the tag or label.

This information will be recorded on the Water Sampling Log form along with any in-situ measurement data and field observations. After collection and identification, the sample will be maintained under the chain of custody procedures as specified elsewhere in this document. If the sample collected is to be split with a governmental or regulatory agency, then the appropriate sample receiver will be indicated on the split sample tag which is affixed to the container containing the split sample and on the sampling log.

3.1 SAMPLE TRANSFER AND SHIPMENT

The following guidelines will be followed in transferring and shipping samples:

1. With the shipping record prepared for each laboratory, samples will be properly packaged for shipment and dispatched to the appropriate laboratory for analysis. Shipping containers will be properly secured for shipment and will be affixed with signature seals if an individual other than the sampler will be delivering the samples to the analytical laboratory.

2. When transferring possession of samples, the individual relinquishing the sample and the new custodian of the sample will sign the record and will note the date and time. A copy of the signed record will be made by the previous custodian and sent to the receiving laboratory to allow tracking of sample possession. All Change of Custody of samples must be a person-to-person exchange of both custody documents and samples. A copy of custody documents will be returned by the laboratory performing the analysis after the samples have been received, and again with the final data package.

3.2 LABORATORY CUSTODY PROCEDURES

General guidelines describing methods for laboratory sample custody are contained in the QA/QC documentation of the analytical laboratory selected to analyze the samples, and may be provided upon request.

4.0 DATA REDUCTION, VALIDATION, INTERPRETATION AND REPORTING

The reduction of the laboratory data, validation of the procedures utilized, the interpretation of the results and the reporting of the results to the client or to the regulatory agency will be accomplished as directed by the client. Laboratory validation data from the laboratory performing the analysis will accompany the report where such validation is necessary.

WASTEWATER SAMPLING AND TESTING CRITERIA

Appendix 1

MOSELY & ASSOCIATES, INC.
WASTEWATER SAMPLING AND TESTING CRITERIA

Parameter Name	Container[1]	Preservation Technique[2,3]	Max. Holding Time[4]	Sample Vol. Recommended
Bacterial Tests:				
Coliform, fecal and total	P, G	Cool, 4° C, 0.008% $Na_2S_2O_3$[5]	6 Hours	150 mls
Fecal streptococci	P, G	Same as Above	6 Hours	150 mls
Inorganic Tests:				
Acidity	P, G	Cool, 4°C	14 days	250 mls
Alkalinity	P, G	Cool, 4°C	14 days	250 mls
Ammonia	P, G	Cool, 4°C, H_2SO_4 to pH < 2	28 days	500 mls
Biochemical oxygen demand	P, G	Cool, 4°C	48 hours	500 mls
Bromide	P, G	None Required	28 days	200 mls
Biochemical oxygen demand, carbonaceous	P, G	Cool, 4°C	48 hours	500 mls
Chemical oxygen demand	P, G	Cool, 4°C, H_2SO_4 to pH < 2	28 days	100 mls
Chloride	P, G	None Required	28 days	200 mls
Chlorine, total residual	P, G	None Required	Analyze Immediately	200 mls
Color	P, G	Cool, 4°C	48 hours	250 mls
Cyanide, total and amenable to chlorination	P, G	Cool, 4°C, NaOH to pH > 12, 0.6g/l ascorbic acid	14 days[6]	1,000 mls
Fluoride	P	None Required	28 days	100 mls
Hardness	P, G	HNO_3 to pH < 2, H_2SO_4 to pH < 2	6 months	100 mls
Hydrogen Ion (pH)	P, G	None Required	Analyze Immediately	100 mls
Kjeldahl and organic nitrogen	P, G	Cool, 4°C, H_2SO_4 to pH < 2	28 days	500 mls
Chromium VI	P, G	Cool, 4°C	24 days	500 mls
Mercury[7]	P, G	HNO_3 to pH < 2	28 days	500 mls
Metals[7], except Chromium VI and mercury	P, G	HNO_3 to pH < 2	6 months	500 mls
Nitrate	P, G	Cool, 4°C	48 hours	500 mls
Nitrate-nitrite	P, G	Cool, 4°C, H_2SO_4 to pH < 2	28 days	500 mls
Nitrite	P, G	Cool, 4°C	48 hours	500 mls
Oil and Grease	G	Cool, 4°C, H^2SO_4 to pH < 2	28 days	1000 mls
Organic carbon	P, G	Cool, 4°C, HCl or H_2SO_4 to pH < 2	28 days	100 mls
Orthophosphate	P, G	Filter Immediately, Cool 4°C	48 hours	200 mls
Oxygen, Dissolved Probe	G Bottle & Top	None Required	Analyze Immediately	Not Applicable
Phenols	G only	Cool, 4°C, H^2SO_4 to pH < 2	28 days	500 mls
Phosphorus (elemental)	P, G	Cool, 4°C	48 hours	2000 mls
Phosphorus, total	P, G	Cool, 4°C, H^2SO_4 to pH < 2	28 days	500 mls
Residue, total	P, G	Cool, 4°C	7 days	500 mls
Residue, Filterable	P, G	Cool, 4°C	7 days	500 mls
Residue, Nonfilterable (TSS)	P, G	Cool, 4°C	7 days	500 mls
Residue, Settleable	P, G	Cool, 4°C	48 hours	1000 mls
Residue, volatile	P, G	Cool, 4°C	7 days	500 mls
Specific conductance	P, G	Cool, 4°C	28 days	500 mls
Sulfate	P, G	Cool, 4°C	28 days	500 mls
Sulfide	P, G	Cool, 4°C add zinc acetate plus NaOH to ph > 9	7 days	250 mls
Sulfite	P, G	None Required	Analyze Immediately	250 mls
Surfactants	P, G	Cool, 4°C	48 hours	500 mls
Temperature	P, G	None Required	Analyze Immediately	Not Applicable
Turbidity	P, G	Cool, 4°C	48 hours	200 mls

Mosely & Associates, Inc.
Wastewater Sampling and Testing Criteria

Parameter Name	Container[1]	Preservation Technique[2,3]	Max. Holding Time[4]	Sample Vol. Recommended
Organic Tests[8]				
Purgeable halocarbons	G, Teflon-lined septum	Cool, 4°C, 0.008% $Na_2S_2O_3$[5]	14 days	40 ml's
Purgeable aromatic hydrocarbons	G, Teflon-lined septum	Cool, 4°C, 0.008% $Na_2S_2O_3$[5], HCl to pH 2[6]	14 days	40 ml's
Acrolein and acrylonitrile	G, Teflon-lined septum	Cool, 4°C, 0.008% $Na_2S_2O_3$[5], Adjust pH to 4-5	14 days	40 ml's
Phenols[11]	G, Teflon-lined cap	Cool, 4°C, 0.008% $Na_2S_2O_3$[5]	7 days until extraction. 40 days after extraction	2,000 ml's
Benzidines[11]	G, Teflon-lined cap	Cool, 4°C, 0.008% $Na_2S_2O_3$[5]	7 days until extraction[13]	2,000 ml's
Phthalate esters[11]	G, Teflon-lined cap	Cool, 4°C	7 days until extraction. 40 days after extraction.	2,000 ml's
Nitrosamines[11, 14]	G, Teflon-lined cap	Cool, 4°C, store in dark, 0.008% $Na_2S_2O_3$[5]	7 days until extraction. 40 days after extraction.	2,000 ml's
PCB's,[11] acrylonitrile	G, Teflon-lined cap	Cool, 4°C	7 days until extraction. 40 days after extraction.	2,000 ml's
Nitroaromatics and isophorone	G, Teflon-lined cap	Cool, 4°C, 0.008% $Na_2S_2O_3$[5] store in dark	7 days until extraction. 40 days after extraction.	2,000 ml's
Polynuclear aromatic hydrocarbons[11]	G, Teflon-lined cap	Cool, 4°C, 0.008% $Na_2S_2O_3$[5]	7 days until extraction. 40 days after extraction.	2,000 ml's
Haloethers[11]	G, Teflon-lined cap	Cool, 4°C, 0.008% $Na_2S_2O_3$[5] store in dark	7 days until extraction. 40 days after extraction.	2,000 ml's
Chlorinated hydrocarbons[11]	G, Teflon-lined cap	Cool, 4°C, 0.008% $Na_2S_2O_3$[5]	7 days until extraction. 40 days after extraction.	2,000 ml's
TCDD[11]	G, Teflon-lined cap	Cool, 4°C	7 days until extraction. 40 days after extraction.	2,000 ml's
	G, Teflon-lined cap	Cool, 4°C, 0.008% $Na_2S_2O_3$[5]	7 days until extraction. 40 days after extraction.	2,000 ml's
Pesticides[11]	G, Teflon-lined cap	Cool, 4°C, pH 5-9[15]	7 days until extraction. 40 days after extraction.	1,000 ml's
Radiological Tests:				
Alpha, beta and radium	P, G	HNO_3 to pH < 2	6 months	3,000 ml's

COMMENTS

NOTE: Container, preservation procedure, and maximum holding time are adapted from 40 CFR 136, Table II, Required Containers, Preservation Techniques and Holding Time, dated 1-4-85. Sample Volume Recommended is a consensus of recommendations from analytical laboratories used for analyses.

1. Polyethylene (P) or Glass (G).
2. Sample preservation should be performed immediately upon sample collection. For composite chemical samples each aliquot should be preserved at the time of collection. When use of an automated sampler makes it impossible to preserve each aliquot, then chemical samples may be preserved by maintaining at 4° C until compositing and sample splitting is completed.
3. When any sample is to be shipped by common carrier or sent through the United States Mail, it must comply with the Department of Transportation Hazardous Materials Regulations (49 CFR Part 172). The person offering such material for transportation is responsible for ensuring such compliance. For the preservation requirements of Table II, the Office of Hazardous Materials, Materials Transportation Bureau, Department of Transportation has determined that the Hazardous Materials Regulations do not apply to the following materials: Hydrochloric acid (HCl) in water solutions at concentrations of 0.04% by weight or less (pH about 1.96 or greater); Nitric acid (HNO_3) in water solutions at concentrations of 0.15% by weight or less (pH about 1.62 or greater); Sulfuric acid (H_2SO_4) in water solutions at concentrations of 0.35% by weight or less (pH about 1.15 or greater); and Sodium hydroxide (NaOH) in water solutions at concentrations of 0.008% by weight or less (pH about 12.30 or less).
4. Samples should be analyzed as soon as possible after collection. The times listed are the maximum times that samples may be held before analysis and still be considered valid. Samples may be held for longer periods only if the permittee, or monitoring laboratory, has data on file to show that the specific types of samples under study are stable for the longer time, and has received a variance from the Regional Administrator under section 136.3(e). Some samples may not be stable for the maximum time period given in the table. A permittee, or monitoring laboratory, is obligated to hold the sampled for a shorter time if knowledge exists to show that this is necessary to maintain sample stability. See paragraph 136.3(e) for details.
5. Should only be used in the presence of residual chlorine.
6. Maximum holding time is 24 hours when Sulfide is present. Optionally all samples may be tested with lead acetate paper before pH adjustment in order to determine if Sulfide is present. If Sulfide is present, it can be removed by the addition of cadmium nitrate powder until a negative spot test is obtained. The sample is filtered and then NaOH is added to pH 12.
7. Samples should be filtered immediately on-site before adding preservative for dissolved metals.
8. Guidance applies to samples to be analyzed by GC, LC, or GC/MS for specific compounds.
9. Sample receiving no pH adjustment must be analyzed within seven days of sampling.
10. The pH adjustment is not required if acrolein will not be measured. Samples for acrolein receiving no pH adjustment must be analyzed within three days of sampling.
11. When the extractable analytes of concern fall within a single chemical category, the specified preservative and maximum holding times should be observed for optimum safeguard of sample integrity. When the analytes of concern fall within two or more chemical categories, the sample may be preserved by cooling to 4° C, reducing residual chlorine with 0.008% sodium thiosulfate, storing in the dark, and adjusting the pH to 6-9; samples preserved in this manner may be held for seven days before extraction and for 40 days after extraction. Exceptions to this optional preservation and holding time procedure are noted in footnote 5 (re: the requirement for thiosulfate reduction of residual chlorine), and footnotes 12, 13 (re: the analysis of benzidine).
12. 1,2-diphenylhydrazine is likely to be present, adjust the pH of the sample to 4.0 plus or minus 0.2 to prevent rearrangement to benzidine.
13. Extracts may be stored up to seven days before analysis if storage is conducted under an inert (oxidant-free) atmosphere.
14. For the analysis of diphenylnitrosamine, add 0.008% $Na_2S_2O_3$ and adjust pH to 7-10 with NaOH within 24 hours of sampling.
15. The pH adjustment may be performed upon receipt at the laboratory and may be omitted if the samples are extracted within 72 hours of collection. For the analysis of aldrin, add 0.008% $Na_2S_2O_3$.

CITY OF BRENTWOOD SEWER PERMIT AND REQUIREMENTS

Appendix 2

City of Brentwood

5211 MARYLAND WAY • BRENTWOOD, TENNESSEE 37027 • PHONE (615) 371-0060
MAILING ADDRESS: P.O. BOX 788 • BRENTWOOD, TN 37024-0788

JOHN C. GRISSOM
DIRECTOR, WATER AND SEWER DEPARTMENT

WATER AND SEWER DEPARTMENT
1750 GEN. GEORGE PATTON DRIVE
BRENTWOOD, TN 37027
TELEPHONE (615) 371-0080
FAX (615) 371-2225

May 29, 1992

Mr. Ralph E. Mosely
Environmental Consultant
Mosely and Associates
232 Genesco Park
Nashville, Tennessee 37217

RE: Genesco Inc. - Kennon Site
Wastewater Discharge Permit -
Renewal of Old Permit

Dear Mr. Mosely:

Thank you for the application which was mailed to me on March 1992 for renewal of the Wastewater Discharge Permit for the Kennon site.

Application has been approved for the next two years.

Copies of the permit has been forwarded to others.

Please call me if there are any questions.

Sincerely,

Larry Moore

c: Ms. Brenda Apple, Depart. of Environment and Conser.
Mr. Jim Kirby, Hart-Freeland-Roberts
Mr. Jim Hale, Genesco
Mr. Bob Carnahan, Metro

DEPARTMENT OF WATER AND SEWERAGE SERVICES
5211 Maryland Way
Brentwood, Tennessee 37212

Page 1 of 1

Permit No. S2.001

PERMIT

FOR THE DISCHARGE OF INDUSTRIAL WASTES

In accordance with the provisions of Tennessee Code Annotated Section 69-3-108 and Regulations promulgated pursuant thereto, and the CITY OF BRENTWOOD, Ordinance No. 81-25.

PERMISSION IS HEREBY GRANTED TO

GENESCO, INC.
232 Genesco Park
Nashville, Tennessee 37217

FOR THE DISCHARGE OF

A Groundwater Collector System from the
Kennon Farm disposal site under remediation

In accordance with the application filed on May 28, 1992 in the City Hall of the City of Brentwood, Tennessee, and in conformity with approved plans, specifications and other data submitted to the City in support of the above application, all of which are filed with and considered as a part of this permit, together with the following named conditions and requirements.

GENESCO, INC. shall comply with the rules and regulations of Metro Ordinance No. 080-343, an Ordinance establishing new criteria for use of the publicly owned treatment works of Nashville and Davidson County, Tennessee.

Issued this First day of June 1992

Michael V. Walker
City Manager, City of Brentwood, TN

Expire Thirty-First day of May 1994

Director, Dept. of Water & Sewerage

Hart Freeland Roberts

March 15, 1990

Mr. James W. O'Brien
Vice President
Genesco, Inc.
232 Genesco Park
Nashville, Tennessee 37217

RE: PERMIT NO. 89-001
City of Brentwood, Tennessee

Dear Mr. O'Brien:

The Metro Government has requested the enclosed rules and regulations should be attached to your Discharge Permit No. 89-001 that was issued to Genesco by the City of Brentwood.

Please contact me if you have any questions.

Yours truly,

HART-FREELAND-ROBERTS, INC.

James G. Kirby

James G. Kirby, P.E.

JGK:jm

pc: Mr. Ralph Mosely w/copy of attached
Mosely & Associates, Inc.
232 Genesco Park
Nashville, TN 37217

Mr. John Grissom

Please respond to:
P.O. Box 190837 • 2525 Murphy Creek Road • Suite 500 • Nashville, TN 37219-0837 • (615) 383-8550

PART I

A. LIMITATIONS ON WASTEWATER STRENGTH AND MONITORING REQUIREMENTS

No permittee shall discharge wastewater in excess of the concentration set forth in the table below unless: (1) an exception has been granted the user under the provisions of Section 40-1-187 Part II of the Metropolitan Code or, (2) the wastewater discharge permit of the user provides as a special permit condition a higher interim concentration level in conjunction with a requirement that the user construct a pretreatment facility or institute changes in operation and maintenance procedures to reduce the concentration of pollutants to levels not exceeding the standards set forth in the table within a fixed period of time.

PARAMETER	MAXIMUM CONCENTRATION mg/L (FLOW PROPORTIONAL COMPOSITE SAMPLE	MAXIMUM INSTANTANEOUS CONCENTRATION mg/L (GRAB SAMPLE)
Ammonia Nitrogen	30.0	60.0
Biochemical Oxygen Demand	300.0	600.0
Chemical Oxygen Demand	500.0	1000.0
Suspended Solids	325.0	650.0
Arsenic (As)	1.0	2.0
Cadmium (Cd)	1.0	2.0
Total Toxic Organics (TTO)	50.0	100.0
Chromium - Total (Cr)	5.0	10.0
Chromium - Hexavalent (Cr6)	0.05	0.1
Copper (Cu)	5.0	10.0
Cyanide (CN-)	2.0	4.0
Lead (Pb)	1.5	3.0
Mercury (Hg)	0.1	0.2
Nickel (Ni)	5.0	10.0
Selenium (Se)	1.0	2.0
Silver (Ag)	5.0	10.0
Zinc (Zn)	5.0	10.0
Oil & Grease (Freon Extractable)	50.0	100.0

1. CRITERIA TO PROTECT THE TREATMENT PLANT INFLUENT

The Director shall monitor the treatment works influent for each parameter in the following table. The Municipal User shall be subject to the reporting and monitoring requirements set forth in this permit as to these parameters. In the event that the influent at the treatment works reaches or exceeds the levels established by said table, the Director shall initiate technical studies to determine the cause of the influent violations, and shall initiate such remedial measures as are necessary, including, but not limited to, the establishment of new or revised pretreatment levels for these parameters. The Director may also change any of these criteria in the event the POTW effluent standards are changed or in the event changes are deemed advisable for effective operation of the POTW.

2. PARAMETER: MAXIMUM CONCENTRATIONS (ppm)/FLOW PROPORTIONAL COMPOSITE SAMPLE

	CWWTP	DCWWTP	WCWWTP
Ammonia	30.0	30.0	10.2
Arsenic	0.1	0.1	0.011
Boron	2.0	2.0	0.3
Cadmium	0.007	0.0016	0.0011
Calcium	2500.0	2500.0	2500.0
Chromium Total	1.5	0.51	0.51
Copper	1.0	0.52	0.52
Iron	0.17	0.07	0.07
Lead	5.0	5.0	1.0
Magnesium	0.23	0.23	0.23
Manganese	50.0	---	6.8
Mercury	11.8	11.8	11.8
Nickel	0.004	0.0009	0.0009
Phenols	0.52	0.32	0.32
Pyrene	0.6	0.03	0.03
Silver	0.0002	0.0002	0.0002
Sodium	6.2	6.2	6.2
Sulfate	---	---	23.8
Sulfide	500.0	---	---
Zinc	---	---	0.34
Butyl Benzylphthalate	2.7	0.43	0.43
Di-N Butyl Phthalate	0.003	0.003	0.003
Di-N Octyl Phthalate	0.03	0.03	0.03
2,4,5 TP Silvex	0.006	0.006	0.006
	0.01	0.01	0.01

3. PREVENTION OF ACCIDENTAL DISCHARGES

All Municipal Users shall provide such facilities and institute such procedures as are reasonably necessary to prevent or minimize the potential for accidental discharge into the POTW of waste regulated by this permit from liquid or raw material storage areas, from truck and rail car loading and unloading areas, from inplant transfer or processing and materials handling areas, from diked areas or holding ponds of any waste regulated by this permit. The permittee shall notify the POTW immediately by telephone of any slug loading, as defined by Metropolitan Code Section 40-1-186.

B. MONITORING PROCEDURES

1. Samples and measurements taken in compliance with the monitoring requirements of this permit shall be representative of the volume and nature of the monitored discharge during a normal production day and shall be taken as follows:

   a. Be performed on FLOW-PROPORTIONAL SAMPLES REPRESENTATIVE OF THE TOTAL WASTEWATER FLOW discharge to the CITY OF BRENTWOOD Sewerage System with the maximum time interval between samples being no longer than sixty (60) minutes.

   b. Be conducted in accordance with U. S. Environmental Protection Agency protocol. The results must be reported to the lowest detectable limit of the methodology.

   c. Provide the flow rate for which the results are indicative to the nearest 100 gallons per day.

2. SAMPLE LOCATION

   The samples will be collected at a manhole as shown on the plans prior to connection to the Brentwood Collection System.

3. TEST PROCEDURES

   a. Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304 (h) of the Clean Water Act of 1977, under which such procedures may be required.

   b. Unless otherwise noted in the permit, all pollutants parameters shall be determined according to methods prescribed in Title 40, CFR, Part 136, as amended, promulgated pursuant to Section 304 (h) of the Act.

   c. GENESCO, INC. must sample and analyze SEMI-ANNUALLY for the following parameters:

      FLOW, BIOCHEMICAL OXYGEN DEMAND, SUSPENDED SOLIDS, OIL & GREASE, pH, AMMONIA, IRON*, ZINC*, CADMIUM*,. AND MAGNESIUM*.

*INDICATES PARAMETERS OF CONCERN AT THE RECEIVING P.O.T.W.

4. MAINTENANCE OF RECORDS

Any Municipal User subject to the reporting requirements established in this section, shall maintain records of all information resulting from any monitoring activities required by this section. Such records shall include for all samples:

(a) The date, exact place, method, and time of sampling and the names of the persons taking the samples;

(b) The date analyses were performed.

(c) Who performed the analyses;

(d) The analytical techniques/method used; and

(e) The results of such analyses.

Any Municipal User required by this paragraph to submit a similar report to the State of Tennessee or EPA under the provisions of 40 CFR 403.12, may submit to the Director a copy of said report in lieu of a separate report to the Director provided that all information required by this permit is included in the report to the State of Tennessee or EPA.

5. RECORDS RETENTION

Any Municipal User subject to the reporting requirements established in this permit shall be required to retain for a minimum of four (4) years any records of monitoring activities and results (whether or not such monitoring activities are required by this permit) and shall make such records available for inspection and copying by the Department of Water and Sewerage Services, the Division of Water Quality Control-Tennessee Department of Health and Environment, or the Environmental Protection Agency. This period of retention shall be extended during the course unresolved litigation regarding the permittee or when requested by the Department of Water and Sewerage Services, the Division of Water Quality Control-Tennessee Department of Health and Environment, or the Environmental Protection Agency.

6. DURATION OF THE PERMIT

Wastewater discharge permits shall be issued for a period stated on the permit. Notwithstanding the foregoing, users becoming subject to a National Pretreatment Standard shall apply for new permits on the effective date of such National Pretreatment Standards. A user must apply in writing for a renewal permit within the period of time not more than ninety (90) days and not less than thirty (30) days prior to expiration of the current permit. Provided further, that limitations or conditions of a permit are subject to modification or changes due to changes in applicable water quality standards, changes in Metro's NPDES permit, changes in the limitations of wastewater strength or POTW protection criteria, changes in other applicable law or regulation, or for other just causes.

7. TRANSFER OF A PERMIT

Wastewater discharge permits are issued to a specific user for a specific operation. A wastewater discharge permit shall not be reassigned, transferred or sold to a new owner, new user, or for different premises, unless approved by the Department of Water and Sewerage Services.

C. REPORTING

1. MONITORING RESULTS

Monitoring results shall be submitted SEMI-ANNUALLY using Discharge Monitoring Report Forms supplied by the City. A copy should be retained for the permittee's files. Discharge Monitoring Reports must be signed and certified by a principal municipal executive officer or ranking elected official, or his duly authorized representative. Such authorization must be submitted in writing and must be submitted in writing and must explain the duties and responsibilities of the authorized representative. Discharge Monitoring Reports and any communication regarding compliance with the conditions of this permit must be sent to:

CITY OF BRENTWOOD, TENNESSEE
P. O. Box 788
Brentwood, Tennessee 37024-0788

Attn: Mr. John Grissom

2. REPORTING SCHEDULE

THE FIRST DISCHARGE MONITORING REPORT IS DUE March 1, 1990. ADDITIONAL MONITORING REPORTS MUST BE RECEIVED IN THIS OFFICE ON OR PRIOR TO SEPTEMBER 1, 1900; MARCH 1, 1990; SEPTEMBER 1, 1991; ETC. UNTIL THIS PERMIT EXPIRES.

3. ADDITIONAL MONITORING BY PERMITTEE

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report Form. Such increased frequency shall also be indicated.

4. FALSIFYING REPORTS

Knowingly, making any false statement on any report required by this permit may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Water Pollution Control Act, as amended.

PART II

A. NATIONAL PRETREATMENT STANDARDS

Certain Municipal Users are now or hereafter shall become subject to National Pretreatment Standards promulgated by the Environmental Protection Agency specifying quantities or concentrations of pollutants or pollutant properties which may be discharge into the POTW. All Industrial Users subject to a National Pretreatment Standard shall comply with all requirements of such standard, and shall also comply with any additional or more stringent limitations contained in their permit. Compliance with National Pretreatment Standards for existing sources subject to such standards or for existing sources which hereafter become subject to such standards shall be within three (3) years following promulgation of the standards, unless a shorter compliance time is specified in the standard. Compliance with National Pretreatment Standards for new sources shall be required upon promulgation of the standard. Except, where, expressly, authorized by an applicable National Pretreatment Standard, no Industrial User shall increase the use of process water or in any way attempt to dilute a discharge as a partial or complete substitution for adequate treatment to achieve compliance with such standard.

B. PROHIBITIONS ON STORM DRAINAGE AND GROUND WATER

Storm water, ground water, rain water, street drainage, roof top drainage, basement drainage, sub-surface drainage, or yard drainage, if unpolluted shall not be discharged through direct or indirect connections to a community sewer unless a storm sewer or other reasonable alternative for removal of such drainage does not exist, and then only when such discharge is permitted by the user's wastewater discharge permit and the appropriate fee is paid for the volume thereof.

C. LIMITATION ON RADIOACTIVE WASTE

No permittee shall discharge or permit to be discharge any radioactive waste into a community sewer except:

(1) When the user is authorized to use radioactive material by the Tennessee Department of Public Health or the Nuclear Regulatory Commission;

(2) When the waste is discharged is strict conformity with applicable laws and regulations of the aforementioned agencies, or any other agency having jurisdiction; and

(3) When a copy of permits received from said regulatory agencies have been filed with the Department of Water and Sewerage Services.

D. PROHIBITIVE DISCHARGE STANDARDS

(1) No permittee shall introduce into the publicly owned treatment works any of the following pollutants which acting either alone or in conjunction with other substances present in the POTW interfere with the operation of the POTW as follows:

a. Pollutants which could create a fire or explosion hazard in the POTW;

b. Pollutants which cause corrosive structural damage to the POTW, but in no case discharges with a pH lower than 5.0 or higher than 10.0;

c. Solid or viscous pollutants in amounts which cause obstruction to the flow of the sewers, or other interference with the operation of or which cause injury to the POTW, including waxy or other materials which tend to coat and clog a sewer line or other appurtenances thereto;

d. Any pollutant, including oxygen demanding pollutants (BOD, etc.) released in a discharge of such volume or strength as to cause interference in the POTW;

e. Heat in amounts which will inhibit biological activity in the POTW resulting in interference, but in no case heat in such quantities that the temperature at the treatment works influent exceeds 40 degrees Centigrade (104 degrees Fahrenheit). Unless a higher temperature is allowed in the user's wastewater discharge permit, no user shall discharge into any sewer line or other appurtenance of the POTW wastewater with a temperature exceeding 65.5 degrees Centigrade (150 degrees Fahrenheit).

The aforesaid pollutants represent a general description of harmful or dangerous conditions, and are in addition to such specific pollutants as may be identified and added from time to time to the Industrial User's Permit.

(2) The permittee shall notify the Industrial Compliance Section on any of the following changes in user discharge to the system no later than 180 days prior to change of discharge:

a. New introductions into such works of pollutants from any source which would be a new source, if such source were discharging pollutants.

b. New introductions of pollutants into such works from a source which would be subject to the Sewer Use Ordinance if it were discharging such pollutants.

c. A substantial change in volume or character or pollutants being discharged into such works at the time the permit is issued.

(3) This notice will include information on the quality and quantity of the wastewater introduced by the new source into the publicly owned treatment works, and on any anticipated impact on the effluent discharged from such works.

PART III

The City of Brentwood shall establish and maintain a Pretreatment Program in accordance with 40 CFR 403 with all changes and corrections. The City of Brentwood, as part of their Program, shall permit and sample or cause to be sampled, in accordance with current protocol; (1) all Industries covered by an enacted or proposed Categorical Pretreatment Standard; (2) all Industries with wastewater flows or strength of compatible pollutants, that would be considered significant contributors to their system. The City of Brentwood shall have legal authority established to enforce their Pretreatment Program. The City of Brentwood shall submit their report to the Metropolitan Department of Water Services, Industrial Compliance Section on the first of September and the first of March, semi-annually, consisting of; (1) the current State of Tennessee format for Pretreatment reporting, (2) results of sampling performed by the City of Brentwood, in accordance with their Trunk and Treatment Agreement with the Metropolitan Government and/or requirements of this permit.

The City of Brentwood's Pretreatment Submittal shall be reviewed by Metro Water Services and transmitted to the State of Tennessee as part of Metro Water Services Pretreatment Submittal.

Metro Water Services shall be the Control Authority for the City of Brentwood relative to all aspects of Pretreatment reporting and enforcement. Metro Water Services shall have the right to audit and/or inspect the City of Brentwood's Pretreatment Program at any time during the effective dates of this permit.

PERMIT SUMMARY

THE CITY OF BRENTWOOD SHALL SAMPLE AND ANALYZE SEMI-ANNUALLY FOR THE FOLLOWING PARAMETERS:

FLOW, BIOCHEMICAL, OXYGEN DEMAND, SUSPENDED SOLIDS, OIL & GREASE, AMMONIA, pH, LEAD, ZINC, CADMIUM, IRON, AND MAGNESIUM

GROUNDWATER SAMPLING SCHEDULE

TABLE 2-3

GROUNDWATER SAMPLING SCHEDULE
Kennon Site - Brentwood, Tennessee

I. KENNON SITE - WELL MONITORING PROGRAM

Quarterly samples of selected monitor wells analyzed for Organic Priority Pollutants - Volatiles, and annual sample for full Priority Pollutants List, less pesticides and PCB's. These samples are required until the site is de-listed by TDEC.

II. CITY OF BRENTWOOD SEWER SAMPLING PROGRAM

Quarterly sample taken at the manhole to City of Brentwood sewer system for Organic Priority Pollutants - Volatiles, with semi-annual Baseline Analysis for the "METRO" list. These are required as long as the site is connected to the City of Brentwood sewer system.

III. SOURCE REMOVAL PHASE - GROUNDWATER DISCHARGE MONITORING PROGRAM

Weekly samples of discharge to sewer for Organic Priority Pollutants - Volatiles, and monthly Baseline Analysis for the "METRO" List required during the excavation of source material In 1990 and 1991.

WATER SAMPLING SCHEDULE FOR THE KENNON SITE

1993 - 1995

SAMPLE COLLECTION PERIOD	SAMPLING LOCATIONS							SEWER	TEST REQUIRED
	Intermediate Monitoring Wells			Downgradient Monitoring Wells					
	UN-1	UN-2	UN-5	UN-3	UN-4	W-10	W-25		
1st Quarter - 1993								X	Priority Pollutants-Volatiles
2nd Quarter - 1993	X			X		X		X	Priority Pollutants-Volatiles; "Metro List" for sewer
3rd Quarter - 1993								X	Priority Pollutants-Volatiles
4th Quarter - 1993	X	X	X	X	X	X	X	X	Full Priority Pollutants List (less pesticides and PCB's) and "Metro List"
1st Quarter - 1994								X	Priority Pollutants-Volatiles
2nd Quarter - 1994	X			X		X		X	Priority Pollutants-Volatiles; "Metro List" for sewer
3rd Quarter - 1994								X	Priority Pollutants-Volatiles
4th Quarter - 1994	X	X	X	X	X	X	X	X	Full Priority Pollutants List (less pesticides and PCB's) and "Metro List"
1st Quarter - 1995								X	Priority Pollutants-Volatiles
2nd Quarter - 1995	X			X		X		X	Priority Pollutants-Volatiles; "Metro List" for sewer
3rd Quarter - 1995								X	Priority Pollutants-Volatiles
4th Quarter - 1995	X	X	X	X	X	X	X	X	Full Priority Pollutants List (less pesticides and PCB's) and "Metro List"

WATER SAMPLING SCHEDULE FOR THE KENNON SITE

1996 - 1998

SAMPLE COLLECTION PERIOD	SAMPLING LOCATIONS							SEWER	TEST REQUIRED
	Intermediate Monitoring Wells			Downgradient Monitoring Wells					
	UN-1	UN-2	UN-5	UN-3	UN-4	W-10	W-25		
1st Quarter - 1996								X	Priority Pollutants-Volatiles
2nd Quarter - 1996	X			X		X		X	Priority Pollutants-Volatiles; "Metro List" for sewer
3rd Quarter - 1996								X	Priority Pollutants-Volatiles
4th Quarter - 1996	X	X	X	X	X	X	X	X	Full Priority Pollutants List (less pesticides and PCB's) and "Metro List"
1st Quarter - 1997								X	Priority Pollutants-Volatiles
2nd Quarter - 1997	X			X		X		X	Priority Pollutants-Volatiles; "Metro List" for sewer
3rd Quarter - 1997								X	Priority Pollutants-Volatiles
4th Quarter - 1997	X	X	X	X	X	X	X	X	Full Priority Pollutants List (less pesticides and PCB's) and "Metro List"
1st Quarter - 1998								X	Priority Pollutants-Volatiles
2nd Quarter - 1998	X			X		X		X	Priority Pollutants-Volatiles; "Metro List" for sewer
3rd Quarter - 1998								X	Priority Pollutants-Volatiles
4th Quarter - 1998	X	X	X	X	X	X	X	X	Full Priority Pollutants List (less pesticides and PCB's) and "Metro List"

WATER SAMPLING SCHEDULE FOR THE KENNON SITE

1999 - 2001

SAMPLE COLLECTION PERIOD	SAMPLING LOCATIONS							SEWER	TEST REQUIRED
	Intermediate Monitoring Wells			Downgradient Monitoring Wells					
	UN-1	UN-2	UN-5	UN-3	UN-4	W-10	W-25		
1st Quarter - 1999								X	Priority Pollutants-Volatiles
2nd Quarter - 1999	X			X		X		X	Priority Pollutants-Volatiles; "Metro List" for sewer
3rd Quarter - 1999								X	Priority Pollutants-Volatiles
4th Quarter - 1999	X	X	X	X	X	X	X	X	Full Priority Pollutants List (less pesticides and PCB's) and "Metro List"
1st Quarter - 2000								X	Priority Pollutants-Volatiles
2nd Quarter - 2000	X			X		X		X	Priority Pollutants-Volatiles; "Metro List" for sewer
3rd Quarter - 2000								X	Priority Pollutants-Volatiles
4th Quarter - 2000	X	X	X	X	X	X	X	X	Full Priority Pollutants List (less pesticides and PCB's) and "Metro List"
1st Quarter - 2001								X	Priority Pollutants-Volatiles
2nd Quarter - 2001	X			X		X		X	Priority Pollutants-Volatiles; "Metro List" for sewer
3rd Quarter - 2001								X	Priority Pollutants-Volatiles
4th Quarter - 2001	X	X	X	X	X	X	X	X	Full Priority Pollutants List (less pesticides and PCB's) and "Metro List"

NOTE: The above schedule continues until the site is de-listed by the Tennessee Department of Environment and Conservation.

WATER SAMPLING LOG

MOSELY & ASSOCIATES, INC.
Water Sampling Log

Project Name/No:

Site Location:

Sample Well/Point:

Weather:

Time Sampling Began: Time Sampling Completed: Date:

EVACUATION DATA - WELL SAMPLING ONLY

Description of Measuring Point:

Listed Elevation of MP (ft msl): Total Sounded Depth of Well Below MP:

Listed Surface Elevation (ft msl): Sounded Depth of Water Below MP:

Height of MP Above Land Surface: Height of Water Column in Well:

Listed Depth of Boring (ft): Gallons Pumped/Bailed Prior to Sampling:

Diameter of Casing:

Gallons per Foot in Casing:

Evacuation Method:

SAMPLING DATA/FIELD PARAMETERS

Color: *Odor:* *Appearance:* *Temperature:*

Other (Specification; OVA; HNU; etc.):

Specific Conductance, umhos/cm: pH:

Sampling Method and Material:

SAMPLE CONTAINER DESCRIPTION

Laboratory Supplying Containers:

Sample Container/Vial Number	Type Container	Preservation

Remarks:

Sampling Personnel:

Well Casing Volumes

GAL/FT	1-1/4"	= 0.077	2"	= 0.16	3"	= 0.37	4"	= 0.065
	1-1/2"	= 0.10	2-1/2"	= 0.24	3-1/2"	= 0.50	6"	= 1.46

R 9-13-93

CHAIN OF CUSTODY RECORD

CHAIN-OF-CUSTODY RECORD

Page ______ of ______

Location: ____________________

Laboratory: ____________________

Project/Number ____________________

Shipping Container ID: ____________________

Sampler(s) ____________________

____

SAMPLE CONTAINER DESCRIPTION

SAMPLE IDENTITY	Date Sampled													Total	Remarks
													Total No. of Containers		

Relinquished by: ____________________ Organization: ____________________

Date: __________ Time: __________

Received by: ____________________ Organization: ____________________

Date: __________ Time: __________

Relinquished by: ____________________ Organization: ____________________

Date: __________ Time: __________

Received by: ____________________ Organization: ____________________

Date: __________ Time: __________

Relinquished by: ____________________ Organization: ____________________

Date: __________ Time: __________

Received by: ____________________ Organization: ____________________

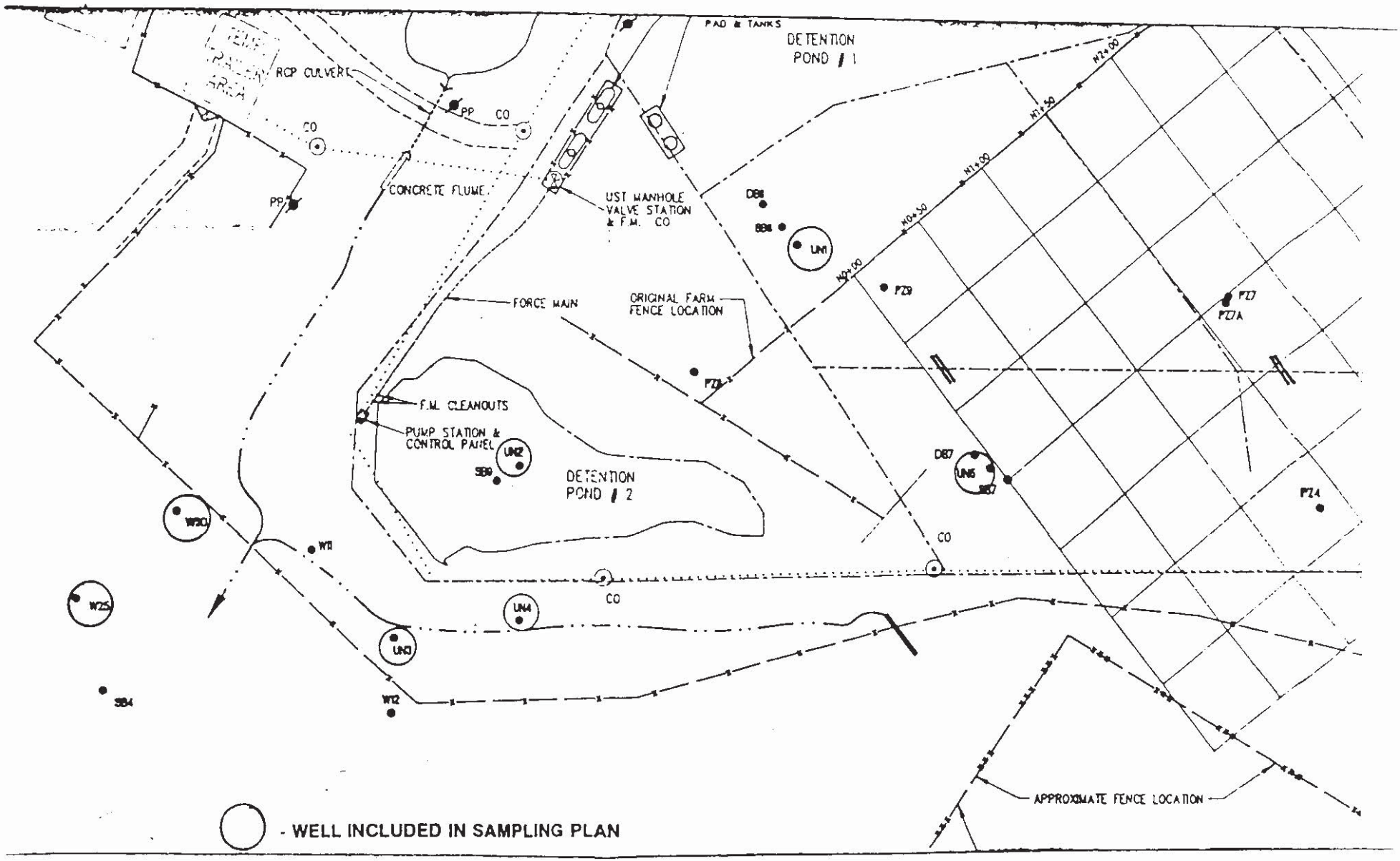
Date: __________ Time: __________

Delivery Method: ______________________________ (attach shipping bill, if any)

1/86

(Use extra sheets, if necessary)

LOCATION OF MONITORING WELLS IN SAMPLING PROGRAM



MAP DEPICTING LOCATIONS OF WELLS TO BE SAMPLED

LIST OF PRIORITY POLLUTANTS TO BE ANALYZED

"METRO LIST"

Flow
Biochemical Oxygen Demand (BOD_5)
Suspended Solids (SS)
Oil and Grease (O & G)
pH
Ammonia
Iron
Zinc
Cadmium
Magnesium

EPA PRIORITY POLLUTANTS LIST
(Less Pesticides and PCB's)

ORGANIC

Volatiles
Benzene
Bromoform
Carbon tetrachloride
Chlorobenzene
Chlorodibromomethane
Chloroethane
2-Chloroethylvinyl ether
Chloroform
Dichlorobromomethane
1,1-Dechloroethane
1.2-Dichloroethane
1,2-Dichloroethylene
1,2-Dichloropropane
1,3-Dichloropropene
Ethylbenzene
Methyl Bromide
Methyl chloride
Methylene chloride
1,1,2,2-Tetrachloroethane
Tetrachloroethylene
Toluene
Trans-1,2-dichloroethylene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethylene
Vinyl chloride

Acid and Base/Neutral Extractables
2-Chlorophenol
2,4-Dichlorophenol
2,4-Dimethylphenol
4,6-Dinitro-o-cresol
2,4-Dinitrophenol
2-Nitrophenol
4-Nitrophenol
P-chloro-m-cresol
Pentachlorophenol
Phenol
2,4,6-Trichlorophenol
Acenaphthene
Acenaphthylene
Anthracene
Benzidine
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Bis-2-chloroethoxymethane
Bis(2-chloroethyl) ether
Bis(2-chloroisopropyl) ether
Bis(2-ethylhexyl) phthalate
4-Bromophenyl phenyl ether
Butyl benzyl phthalate
2-Chloronaphthalene
4-Chlorophenyl phenyl ether
Chrysene

Acid and Base/Neutral Extractables (Cont.)
Dibenz(a,h)anthracene
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
3,3-Dichlorobenzidine
Diethyl phthalate
Di-n-butyl phthalate
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
1,2-Diphenyl-hydrazine
Fluoranthene
Fluorene
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Indeno(1,2,3-cd)pyrene
Isophorone
Naphthalene
Nitrobenzene
N-nitrosodimethylamine
N-nitrosodi-n-propylamine
N-nitrosodiphenylamine
Phenanthrene
Pyrene
1,2,4,-Trichlorobenzene

INORGANIC/OTHER

Antimony
Arsenic
Asbestos
Beryllium
Cadmium
Chromium
Copper
Cyanide
Lead
Mercury
Nickel
Phenois
Selenium
Silver
Thallium
Zinc

STATUS, CONSTRUCTION DETAILS AND
LOCATION OF WELLS

STATUS OF WELLS - KENNON SITE

A total of 56 groundwater monitoring wells were drilled on the Kennon property. Many of the wells were designed and used during the initial investigation activities on the property; others were designed for use as groundwater monitoring wells. Several of the wells have been damaged by farm equipment (i.e., W-27, SB-12, W-28, W-17, W-19) and others are screened in extremely low permeability zones and do not produce sufficient water for sampling purposes (e.g., PZ-1, PZ-7A, W-20, W-21, W-22, W-18, W-13, W-14, SB-10, SB-12, SB-13).

The following Status of Wells Report lists all wells and describes those proposed to be retained in the sampling program, as well as those proposed to be closed. The map and construction details charts that follow contain additional information relative to the Kennon site wells.

It is proposed that those wells identified as unsuitable for sampling be closed in 1994 or 1995. The remainder of the wells would either be included in the groundwater sampling program or available for alternates, if needed, for the program, and would be closed as a part of site de-listing procedures when specified by TDEC.

Well closure will follow Tennessee Rule 1200-4-10, Well Construction and Abandonment Standards, with the exception of 1200-4-10-.09(b)3, which specifies well chlorination prior to sealing. Since this would introduce chlorinated hydrocarbons into the shallow aquifer which might interfere with subsequent groundwater analysis, this requirement is not deemed appropriate for this site.

STATUS OF WELLS
Kennon Site - Brentwood, Tennessee

Well Number	Status	Reason
DB1	Will Be Closed	Upgradient, too deep for meaningful sample.
DB2	Will Be Closed	Upgradient, too deep for meaningful sample.
DB3	Will Be Closed	Upgradient, too deep for meaningful sample.
DB4	Will Be Closed	Too deep for meaningful sample.
DB5	Will Be Closed	Too deep for meaningful sample.
DB6	Will Be Closed	Too deep for meaningful sample.
DB7	Will Be Closed	Too deep for meaningful sample.
DB8	Will Be Closed	Too deep for meaningful sample.
PZ1	Will Be Closed	None or limited recovery.
PZ2	Will Be Closed	Upgradient of site.
PZ3	Will Be Closed	Upgradient of site.
PZ4	Remain Open	Alternate for UN5.
PZ5	Will Be Closed	Upgradient of site.
PZ6	Will Be Closed	Upgradient of site.
PZ7	Remain Open	Alternate for UN5.
PZ7A	Will Be Closed	None or limited recovery.
PZ8	Remain Open	Alternate for UN1, UN9
PZ9	Remain Open	Alternate for UN1, UN9
SB1	Will Be Closed	Upgradient of site.
SB2	Will Be Closed	Upgradient of site.
SB3	Will Be Closed	Upgradient of site.
SB4	Remain Open	Alternate for W25.
SB5	Remain Open	Alternate for W25.
SB6	Will Be Closed	Upgradient of site.
SB7	Remain Open	Alternate for UN5.

Well Number	Status	Reason
SB8	Remain Open	Alternate for UN1.
SB9	Remain Open	Alternate for UN2.
SB10	Will Be Closed	None or limited recovery.
SB11	Remain Open	Alternate for UN1, UN5.
SB12	Will Be Closed	Damaged by farm equipment/none or limited recovery.
SB13	Will Be Closed	None or limited recovery.
UN1	Remain Open	Included in groundwater sampling plan.
UN2	Remain Open	Included in groundwater sampling plan.
UN3	Remain Open	Included in groundwater sampling plan.
UN4	Remain Open	Included in groundwater sampling plan.
UN5	Remain Open	Included in groundwater sampling plan.
W10	Remain Open	Included in groundwater sampling plan.
W11	Remain Open	Alternate for W10.
W12	Remain Open	Alternate for W10.
W13	Will Be Closed	None or limited recovery.
W14	Will Be Closed	None or limited recovery.
W15	Remain Open	Alternate for W25.
W16	Remain Open	Alternate for W23.
W17	Will Be Closed	Damaged by farm equipment.
W18	Will Be Closed	None or limited recovery.
W19	Will Be Closed	Damaged by farm equipment.
W20	Will Be Closed	None or limited recovery.
W21	Will Be Closed	None or limited recovery.
W22	Will Be Closed	None or limited recovery.
W23	Remain Open	Alternate for W25.
W24	Remain Open	Alternate for W25.
W25	Remain Open	Included in groundwater sampling plan.

Well Number	Status	Reason
W26	Will Be Closed	Upgradient of site.
W27	Will Be Closed	Upgradient of site/damaged by farm equipment.
W28	Will Be Closed	Upgradient of site/damaged by farm equipment.
W29	Will Be Closed	Upgradient of site.

Table 4. Construction Details of Monitor Wells Installed by Geologic Associates, Inc.

WELL NO.	INSTALLATION DATE	SURFACE ELEV. (ft msl)	MEAS. PT. ELEV. (ft msl)	SCREENED INTERVAL (Depth, ft)	FILTER PACK INTERVAL (Depth, ft)	BENTONITE SEAL INTERVAL (Depth, ft)	GROUT BACKFILL INTERVAL (Depth, ft)	AUGER OR WASH BIT REFUSAL (Depth, ft)
PZ-1	1/15/86	777.1	780.3	20.55 - 30.55	12.0 - 31.3	9.6 - 12.0	0 - 9.6	9.6
PZ-2	1/15/86	778.08	781.2	20.7 - 30.7	6.0 - 30.7	4.5 - 6.0	0 - 4.5	5.4
PZ-3	1/17/86	787.25	790.0	20.7 - 30.5	6.5 - 30.7	5.0 - 6.5	0 - 5.0	5.7
PZ-4	1/17/86	790.40	793.6	20.0 - 30.0	7.0 - 31.2	5.0 - 7.0	0 - 5.0	5.7
PZ-5	1/20/86	797.70	800.6	21.0 - 32.0	6.0 - 32.0	4.0 - 6.0	0 - 4.0	5.0
PZ-6	1/21/86	808.47	810.5	18.5 - 28.5	10.5 - 28.5	8.5 - 10.5	0 - 8.5	9.3
PZ-7	1/23/86	779.08	782.0	5.0 - 8.5	5.0 - 8.3	3.5 - 5.0	0 - 3.5	6.2
PZ-7A	1/24/86	778.77	781.5	11.4 - 21.4	7.5 - 21.4	6.0 - 7.5	0 - 6.0	6.3
PZ-8	1/27/86	777.60	780.7	8.0 - 11.1	8.0 - 11.0	6.0 - 8.0	0 - 6.0	9.9
PZ-9	1/28/86	777.0	779.4	7.5 - 10.4	7.0 - 10.4	5.5 - 7.0	0 - 5.5	7.4
W-10	3/04/86	769.8	772.1	5.4 - 13.2	3.7 - 13.2	1.7 - 3.7	0 - 1.75	7.8
W-11	3/04/86	768.83	771.2	1.8 - 7.2	1.8 - 7.2	0 - 1.8		4.9
W-12	3/04/86	771.19	773.5	4.1 - 9.5	3.1 - 9.5	1.0 - 3.1	0 - 1.0	7.2
W-13	3/04/86	764.07	776.5	1.4 - 7.0	1.3 - 7.0	0 - 1.3		4.6
W-14	3/04/86	767.29	769.7	2.6 - 5.5	2.6 - 5.5	0 - 2.6		3.5
W-15	3/14/86	765.16	767.6	3.6 - 6.5	2.6 - 6.5	0 - 2.6		4.5
W-16	3/04/86	767.5	769.9	6.1 - 11.5	5.1 - 11.5	2.6 - 5.1	0 - 2.6	1.2
W-17	3/14/96	758.3	760.6	2.0 - 7.5	2.1 - 8.0	0 - 2.1		5.7
W-18	3/14/86	759.0	761.4	4.7 - 9.2	3.4 - 9.2	1.2 - 3.4	0 - 1.2	7.0
W-19	3/14/86	759.9	761.3	5.6 - 11.0	4.6 - 11.0	2.6 - 4.6	0 - 2.6	8.9
W-20	3/14/86	751.2	753.6	3.7 - 6.5	2.7 - 6.5	0 - 2.7		4.4
W-21	2/28/86	750.31	752.7	6.0 - 11.5	5.2 - 11.5	3.2 - 5.2	0 - 3.2	8.5
W-22	2/28/86	750.0	752.4	2.2 - 7.8	2.0 - 7.0	0 - 2.0		5.4
W-23	2/28/86	744.61	747.0	6.5 - 14.5	4.5 - 14.5	2.5 - 4.5	0 - 2.5	11.2
W-24	3/03/86	745.0	748.0	8.5 - 13.8	7.0 - 13.8	4.5 - 7.0	0 - 4.5	11.3
W-25	3/14/86	765.10	767.5	1.5 - 6.9	3.0 - 6.9	0 - 3.0		6.9
W-26	3/03/86	792.10	794.5	8.0 - 21.2	6.5 - 21.2	3.0 - 6.5	0 - 3.0	10.9
W-27	3/03/86	794.79	797.3	1.0 - 11.6	1.6 - 11.6	0 - 1.6		7.0
W-28	3/03/86	764.99	767.4	3.0 - 11.0	2.5 - 11.0	0 - 2.5		5.8
W-29	3/04/86	822.0	824.4	16.7 - 44.5	10.2 - 44.5	8.2 - 10.2	0 - 8.2	8.3

NOTES

1. Measuring points are top of PVC casing.
2. Total depth of each well is the bottom of the filter pack.
3. All casing is 2-inch-diameter PVC, flush threaded.
4. All screen is 2-inch-diameter PVC, slotted (0.01 in slot).
5. Wells PZ-1 through PZ-9 wash-bored to bedrock (6-inch-diameter borehole).
6. Wells W-10 through W-29 augered to bedrock (6-inch-diameter borehole).
7. All wells except W-25 cored from top of bedrock to total depth (3-inch-diameter corehole).

Table 7. G&M Monitor-Well Construction Details

Well Number	Surface Elevation (ft msl)	Top of Casing* Elevation (ft msl)	Surface** Casing	Top of** Bentonite Seal	Top of** Filter Pack	Top of** Screen	Total Depth of Boring
DB1	793.3	796.87	35.0	102.2	107.1	108.9	119.4
DB2	787.2	790.22	21.5	91.0	95.5	97.7	108.2
DB3	771.0	773.76	27.0	68.2	72.0	74.5	94.9
DB4	744.8	747.84	20.0	76.8	80.3	82.4	92.9
DB5	760.7	764.09	25.0	93.2	97.4	99.6	110.1
DB6	790.5	793.68	35.0	126.8	129.8	132.9	143.7
DB7	779.2	782.41	22.0	94.3	100.7	103.9	114.3
DB8	777.9	781.06	30.0	86.0	95.7	98.7	109.1
SB1	820.2	823.62	18.0	18.4	25.6	26.7	37.1
SB2	788.2	791.11	7.5	8.5	12.5	14.5	20.0
SB3	771.6	774.34	12.0	19.4	23.2	24.7	30.2
SB4	768.1	771.09	8.5	7.8	10.4	12.8	18.4
SB5	760.5	763.40	8.5	7.6	12.1	13.6	19.2
SB6	790.6	793.96	10.0	23.1	26.6	28.7	34.3
SB7	780.0	783.36	13.5	11.7	14.5	16.6	22.0
SB8	777.9	781.12	12.0	11.3	14.3	16.8	22.2
SB9	770.7	773.79	6.5	8.8	13.3	15.4	20.8
SB10	781.9	784.85	7.5	12.0	16.5	18.6	24.0
SB11	780.4	783.82	9.0	12.8	16.1	18.4	23.8
SB12	783.6	786.68	9.0	12.3	16.8	18.9	24.3
SB13	784.3	787.36	8.0	12.8	16.5	18.9	24.3
UN1	777.4	780.45	N/A	3.4	7.1	7.2	9.4
UN2	770.6	773.70	N/A	0.1	2.1	2.2	4.5

* Top of 2-in-diameter casing (water level measuring point)
** Measured depth in feet below land surface

ADDITIONAL MONITORING WELLS IN 1988

Well Number	Installation Date	Surface Elevation (ft msl)	Measurement Point Elevation (ft msl)	Screened Interval (depth, ft)	Filter Pack Interval (depth, ft)	Bentonite Seal Interval (depth, ft)	Total Depth of Boring (ft)
UN-3	05/11/88	770.50	773.00	3.1 - 5.2	2.5 - 5.2	0.0 - 2.5	5.2
UN-4	05/10/88	772.05	774.33	4.6 - 6.7	3.0 - 6.7	0.0 - 3.0	6.7
UN-5	05/10/88	780.01	782.22	8.2 - 10.3	3.0 - 10.3	0.0 - 3.0	10.3

NOTE: Depth, ft measurements are from land surface.

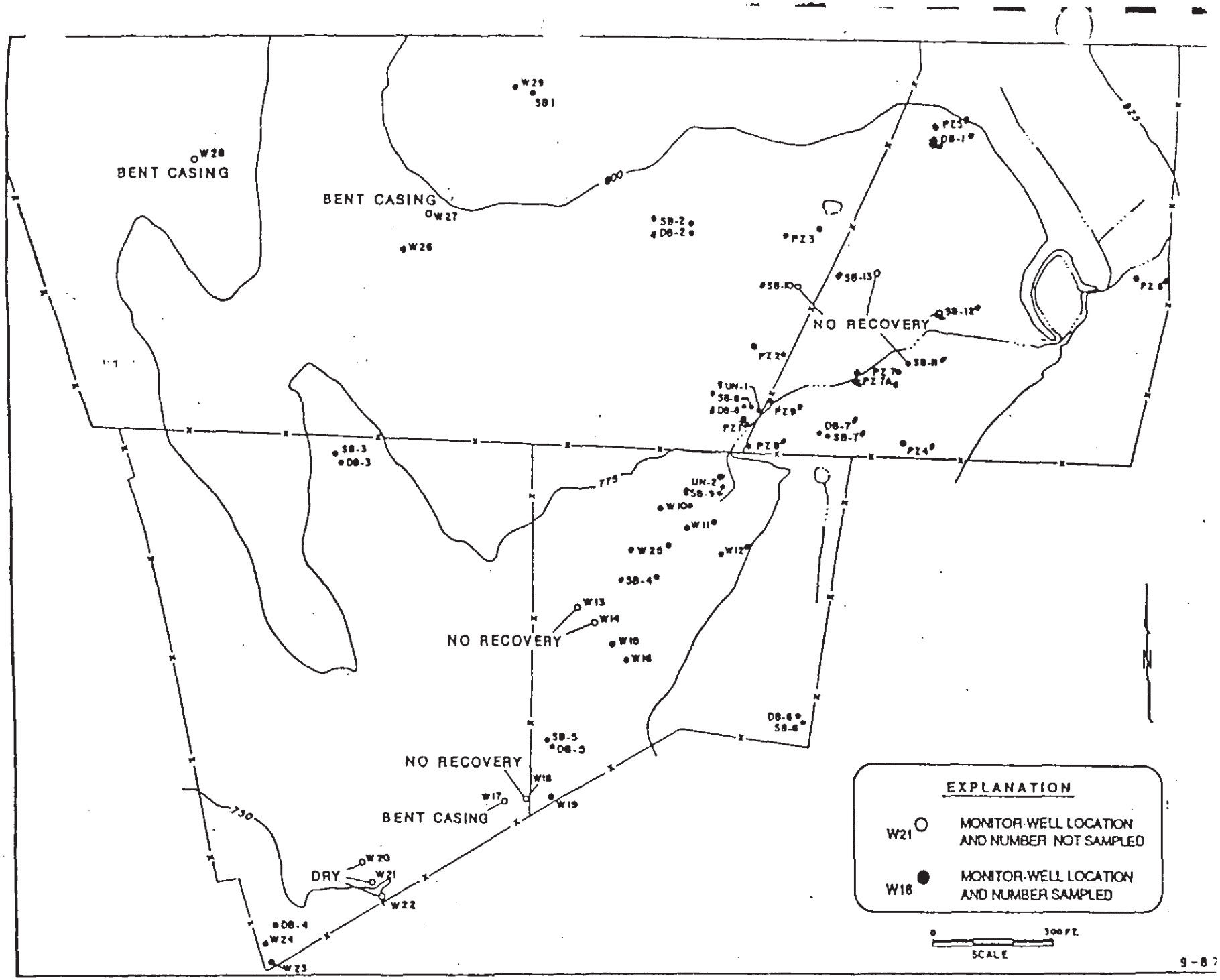


FIGURE 27. GROUND-WATER QUALITY SAMPLING POINTS (JULY 1987)

GROUNDWATER MONITORING RESULTS
TDEC WELL MONITORING PROGRAM

TDEC WELL MONITORING

QUARTERLY/BI-ANNUAL MONITORING PROGRAM - KENNON SITE

VOLATILE ORGANICS

USEPA METHOD 8240 OR EPA HSL VOLATILES	PRE-CONSTRUCTION BGD SAMPLE - 2/20/89 & 3/29/89											
	UN-1	UN-2	UN-3	UN-4	UN-5	W-10	W-11	W-12	W-25	FB	RB	TB
Acetone												
Benzene	.02	.002										
Bromodichloromethane												
Bromoform												
Bromomethane												
2-Butanone												
Carbon Disulfide												
Carbon Tetrachloride												
Chlorobenzene												
Chloroethane		.129			.09							
Chloroform												
Chloromethane												
Dibromochloromethane												
1,2-Dichlorobenzene												
1,3-Dichlorobenzene												
1,4-Dichlorobenzene												
1,1-Dichloroethane	.32	.114	.01		.14							
1,2-Dichloroethane	.06											
1,1-Dichloroethene												
Trans-1,2-Dichloroethene	.47	.109			.23							
1,2-Dichloropropane												
CIS-1,3-Dichloropropene												
Trans-1,3-Dichloropropene												
Ethyl Benzene	.04											
2-Hexanone												
Methylene Chloride												
4-Methyl-2-Pentanone												
Styrene												
1,1,2,2-Tetrachloroethane												
Tetrachloroethene												
Toluene	6.9	.003										
1,1,1-Trichloroethane	.07	.051										
1,1,2-Trichloroethane												
Trichloroethene		.007										
Vinyl Acetate												
Vinyl Chloride		.011										
Total Xylenes	.27											
Total-1,2-Dichloroethylene												
1,1-Dichloroethylene												
NO VOLATILES DETECTED				•		•	•	•	•	•	•	•

TDEC WELL MONITORING - ANALYSIS OF RESULTS (All results in milligrams/liter)
QUARTERLY/BI-ANNUAL MONITORING PROGRAM - KENNON SITE

VOLATILE ORGANICS

USEPA METHOD 8240	1ST QRT./ 1991 - 4/9/91				2ND QTR./ 1991 - 6/21/91					
OR EPA HSL VOLATILES	UN-3	W-10	MB	TB	RB	TB	UN-1	UN-3	W-10	W-25
Acetone										
Benzene							.0014J			
Bromodichloromethane										
Bromoform										
Bromomethane										
2-Butanone										
Carbon Disulfide										
Carbon Tetrachloride										
Chlorobenzene										
Chloroethane										
Chloroform						0.0009J				
Chloromethane										
Dibromochloromethane										
1,2-Dichlorobenzene										
1,3-Dichlorobenzene										
1,4-Dichlorobenzene										
1,1-Dichloroethane							.034	.0026J		
1,2-Dichloroethane							.0061J	.0029J		
1,1-Dichloroethene										
Trans-1,2-Dichloroethene							0.22			
1,2-Dichloropropane										
CIS-1,3-Dichloropropene										
Trans-1,3-Dichloropropene										
Ethyl Benzene							.0018J			
2-Hexanone										
Methylene Chloride					0.0003J	.0006JB				
4-Methyl-2-Pentanone										
Styrene										
1,1,2,2-Tetrachloroethane										
Tetrachloroethene										
Toluene		.0021			0.0014J					
1,1,1-Trichloroethane						.0057J				
1,1,2-Trichloroethane										
Trichloroethene						.0025J				
Vinyl Acetate										
Vinyl Chloride						.054				
Total Xylenes										
Total-1,2-Dichloroethylene										
1,1-Dichloroethylene										
NO VOLATILES DETECTED	-		-	-					-	-

TDEC WELL MONITORING - ANALYSIS OF RESULTS (All results in milligrams/liter)
QUARTERLY/BI-ANNUAL MONITORING PROGRAM - KENNON SITE

VOLATILE ORGANICS

USEPA METHOD 8240	3RD QTR./ 1991 - 10/25/91			4TH QTR. / 1991 - 12/18/91							
OR EPA HSL VOLATILES	W-10	MB	TB	UN-1	UN-3	SB-7	W-10	W-25	TB	MB	MB
Acetone	0.012J		0.0064J	0.16							
Benzene	0.0009J			0.0015J							
Bromodichloromethane											
Bromoform											
Bromomethane											
2-Butanone											
Carbon Disulfide				0.012J							
Carbon Tetrachloride											
Chlorobenzene	0.0009J										0.0014J
Chloroethane											
Chloroform											
Chloromethane											
Dibromochloromethane											
1,2-Dichlorobenzene											0.0032J
1,3-Dichlorobenzene											0.0035J
1,4-Dichlorobenzene											0.0034J
1,1-Dichloroethane				0.014		0.76D					
1,2-Dichloroethane											
1,1-Dichloroethene											
Trans-1,2-Dichloroethene				0.019		0.240D					
1,2-Dichloropropane											
CIS-1,3-Dichloropropene											
Trans-1,3-Dichloropropene											
Ethyl Benzene											
2-Hexanone											
Methylene Chloride											
4-Methyl-2-Pentanone											
Styrene											
1,1,2,2-Tetrachloroethane											
Tetrachloroethene											
Toluene											
1,1,1-Trichloroethane											
1,1,2-Trichloroethane											
Trichloroethene											
Vinyl Acetate											
Vinyl Chloride											
Total Xylenes											
Total-1,2-Dichloroethylene											
1,1-Dichloroethylene											
NO VOLATILES DETECTED		•		•			•	•	•	•	

TDEC WELL MONITORING - ANALYSIS OF RESULTS (All results in milligrams/liter)
QUARTERLY/BI-ANNUAL MONITORING PROGRAM - KENNON SITE

VOLATILE ORGANICS

USEPA METHOD 8240	1ST QTR./ 1992 - 3/16/92					2ND QTR./ 1992 - 6/16/92					
OR EPA HSL VOLATILES	W-10	UN-3	TB	MB	MB	UN-1	UN-3	W-10	W-25	TB	MB
Acetone	01JB	.005JB	.0084JB	.0036JB	.0045J						
Benzene											
Bromodichloromethane											
Bromoform											
Bromomethane											
2-Butanone											
Carbon Disulfide											
Carbon Tetrachloride											
Chlorobenzene								.0007J			
Chloroethane											
Chloroform											
Chloromethane											
Dibromochloromethane											
1,2-Dichlorobenzene											
1,3-Dichlorobenzene											
1,4-Dichlorobenzene											
1,1-Dichloroethane							.0047J				
1,2-Dichloroethane											
1,1-Dichloroethene							.0027J				
Trans-1,2-Dichloroethene											
1,2-Dichloropropane											
CIS-1,3-Dichloropropene											
Trans-1,3-Dichloropropene											
Ethyl Benzene								.0015J			
2-Hexanone											
Methylene Chloride											
4-Methyl-2-Pentanone											
Styrene											
1,1,2,2-Tetrachloroethane											
Tetrachloroethene											
Toluene								.0068J			
1,1,1-Trichloroethane						.0033J					
1,1,2-Trichloroethane											
Trichloroethene						.0022J					
Vinyl Acetate											
Vinyl Chloride											
Total Xylenes								.0013J			
Total-1,2-Dichloroethylene											
1,1-Dichloroethylene											
NO VOLATILES DETECTED									•	•	•

TDEC WELL MONITORING - ANALYSIS OF RESULTS (All results in milligrams/liter)
QUARTERLY/BI-ANNUAL MONITORING PROGRAM - KENNON SITE

VOLATILE ORGANICS

USEPA METHOD 8240	3RD QTR / 1992 (9-16-92)			4TH QTR/1992 (12-29-92)		1ST QTR/1993 (4-6-93)		2ND QTR / 1993 (5-6-93)		
OR EPA HSL VOLATILES	X_1	X_2	MB	X	MB	X	MB	W-10	UN-3	UN-1
Acetone										
Benzene										
Bromodichloromethane										
Bromoform										
Bromomethane										
2-Butanone										
Carbon Disulfide										
Carbon Tetrachloride										
Chlorobenzene										
Chloroethane										
Chloroform										
Chloromethane										
Dibromochloromethane										
1,2-Dichlorobenzene										
1,3-Dichlorobenzene										
1,4-Dichlorobenzene										
1,1-Dichloroethane	.0610	.0600								
1,2-Dichloroethane		.0048J								
1,1-Dichloroethene	.0240	.0250								
Trans-1,2-Dichloroethene										
1,2-Dichloropropane										
CIS-1,3-Dichloropropene										
Trans-1,3-Dichloropropene										
Ethyl Benzene										
2-Hexanone										
Methylene Chloride										
4-Methyl-2-Pentanone										
Styrene										
1,1,2,2-Tetrachloroethane										
Tetrachloroethene										
Toluene										0.0012J
1,1,1-Trichloroethane										
1,1,2-Trichloroethane										
Trichloroethene										0.0009J
Vinyl Acetate										
Vinyl Chloride										
Total Xylenes										
Total-1,2-Dichloroethylene										
1,1-Dichloroethylene										
NO VOLATILES DETECTED										

TDEC WELL MONITORING - ANALYSIS OF RESULTS (All results in milligrams/liter)
QUARTERLY/BI-ANNUAL MONITORING PROGRAM - KENNON SITE

VOLATILE ORGANICS

USEPA METHOD 8240	2ND QTR/1993 (cont)		3RD QTR/1993 (8-4-93)		4TH QTR / 1993 (10-26-93)					
OR EPA HSL VOLATILES	X	MB	X	MB	W10	W25	DB8	SB7	X	MB
Acetone					0.0066J	0.017J	0.0066J	0.0072J	0.013J	
Benzene										
Bromodichloromethane										
Bromoform										
Bromomethane										
2-Butanone										
Carbon Disulfide							0.0014J			
Carbon Tetrachloride										
Chlorobenzene										
Chloroethane										
Chloroform										
Chloromethane										
Dibromochloromethane										
1,2-Dichlorobenzene										
1,3-Dichlorobenzene										
1,4-Dichlorobenzene										
1,1-Dichloroethene								0.2		
1,2-Dichloroethane								0.051		
1,1-Dichloroethene										
Trans-1,2-Dichloroethene								0.046		
1,2-Dichloropropane										
CIS-1,3-Dichloropropene										
Trans-1,3-Dichloropropene										
Ethyl Benzene										
2-Hexanone										
Methylene Chloride									0.0014J	
4-Methyl-2-Pentanone										
Styrene										
1,1,2,2-Tetrachloroethane										
Tetrachloroethene										
Toluene						0.04				
1,1,1-Trichloroethane										
1,1,2-Trichloroethane										
Trichloroethene										
Vinyl Acetate										
Vinyl Chloride										
Total Xylenes										
Total-1,2-Dichloroethylene										
1,1-Dichloroethylene										
NO VOLATILES DETECTED										

GROUNDWATER MONITORING RESULTS
CITY OF BRENTWOOD MONITORING PROGRAM

WASTE WATER SAMPLING PROGRAM - CITY OF BRENTWOOD
KENNON SITE - MANHOLE "X"
All Results in Milligrams per Liter

PARAMETER	BASELINE 11-30-90	1ST QTR. 3-15-90	2ND QTR. 6-5-90	3RD QTR. 8-29-90	4TH QTR. 11-30-90	1ST QTR. 4-9-91	2ND QTR. 6-21-91	3RD QTR. 10-25-91	4TH QTR. 12-18-91	1ST QTR. 3-16-92	2ND QTR. 6-16-92	3RD QTR. 9-16-92 "X"1	3RD QTR. 9-16-92 "X"2
Ammonia Nitrogen Dist.	0.14								.00019				
BOD	<5								< 003				
Hexavalent Chromium	<0.01												
COD	18												
T. Cyanide	<0.01												
Oil & Grease	<2												
TSS	4								.004				
Cadmium	<0.005												
Chromium	<0.02												
Copper	<0.01								.005				
Lead	<0.1								.028				
Nickel	<0.02								.024				
Silver	<0.01												
Zinc	0.04								.036				
Arsenic	0.004												
Selenium	<0.02												
Mercury	<0.0002												
Priority Poll. VOC													
Dichlorobromomethane				.0022									
Chloroethane	0.013	0.0177	0.005		0.017			.0038J					
1,1-Dichloroethane	0.050	0.0531	0.0369	0.0818	0.061	0.016	0.047	0.079	0.029		0.025	0.061	0.06
1,2-Dichloroethane		0.0106	0.007	0.0095			.0058J	.067J					0048J
Tetrachloroethylene													
1,1,1-Trichloroethane	0.023	0.0216	0.0045	0.0043	0.012	0.011	.0079J		.0052J	.0035J	.0032J		
Benzene				0.0035									
Methylene Chloride		0.0128											
Toluene					0.0073			0.0013			0.01		
1,2-Dichloroethylene	0.056	0.0606	0.0259	0.0113	0.09	0.14							
Trichloroethylene													
Vinyl Chloride					0.018								
1,1-Dichloroethylene													
Ethylbenzene													
Dichlorodiflouromethane													
1,2-Dichloroethene							0.036	0.034		.0065J	0.016	0.024	0.025
1,1-Dichloroethene													
Trichloroethene									.0029J				
Acetone													

WASTE WATER SAMPLING PROGRAM - CITY OF BRENTWOOD
KENNON SITE - MANHOLE "X"
All Results in Milligrams per Liter

PARAMETER	4TH QTR. 12-29-92	1ST QTR. 4-6-93	2ND QTR. 5-6-93	3RD QTR. 8-4-93	4TH QTR. 10-26-93	1ST QTR.	2ND QTR.	3RD QTR.	4TH QTR.	1ST QTR.	2ND QTR.	3RD QTR.	4TH QTR.
Ammonia Nitrogen Dist.													
BOD													
Hexavalent Chromium													
COD													
T. Cyanide													
Oil & Grease					0.0099								
TSS					0.03								
Cadmium													
Chromium													
Copper													
Lead													
Nickel													
Silver													
Zinc					0.034								
Arsenic													
Selenium													
Mercury													
Priority Poll. VOC													
Dichlorobromomethane													
Chloroethane													
1,1-Dichloroethane													
1,2-Dichloroethane													
Tetrachloroethylene													
1,1,1-Trichloroethane													
Benzene													
Methylene Chloride					0.0014J								
Toluene													
1,2-Dichloroethylene													
Trichloroethylene													
Vinyl Chloride													
1,1-Dichloroethylene													
Ethylbenzene													
Dichlorodifluoromethane													
1,2-Dichloroethene													
1,1-Dichloroethene													
Trichloroethene													
Acetone					0.013J								

GROUNDWATER MONITORING RESULTS
EVACUATION MONITORING PROGRAM

WASTE WATER SAMPLING PROGRAM - CITY OF BRENTWOOD
KENNON SITE - EXCAVATION SAMPLES
All Results in Milligrams per Liter

PARAMETER	BASELINE 11-30-90	EXCAV. 10-24-90	EXCAV. 11-20-90	EXCAV. 12-7-90	EXCAV. 12-14-90	EXCAV. 12-19-90	EXCAV. 1-18-91	EXCAV. 1-25-91*	EXCAV. 1-31-91	EXCAV. 4-9-91
Ammonia Nitrogen Dist.	0.14	0.93	3.4							
BOD	<5	40.0	7.0				9.0			
Hexavalent Chromium	<0.01									
COD	18		43.0				43			
T. Cyanide	<0.01									
Oil & Grease	<2		1.4							
TSS	4	9.3	12.0				18.0			
Cadmium	<0.005	0.011								
Chromium	<0.02									
Copper	<0.01									
Lead	<0.1									
Nickel	<0.02									
Silver	<0.01									
Zinc	0.04	0.053	0.076				0.024			
Arsenic	0.004									
Selenium	<0.02									
Mercury	<0.0002		0.48							
Priority Poll. VOC										
Dichlorobromomethane										
Chloroethane	0.013	0.0034	0.049			0.017			0.011	
1.1-Dichloroethane	0.050	0.042	0.12	0.0053	0.0097	0.081	0.0048	0.28	0.072	.016
1.2-Dichloroethane		0.014	0.11		0.013		0.0047	0.19	0.009	
Tetrachloroethylene		0.0033	0.022	0.011	0.0075		0.011		0.0036	
1.1.1-Trichloroethane	0.023	0.0084	0.12	0.039	0.027	0.012	0.03	0.68	0.019	.011
Benzene			0.0031					0.019		
Methylene Chloride			0.069		0.004		0.0021			
Toluene			0.16	0.017		0.0073		11	0.013	
1.2-Dichloroethylene	0.056		0.19		0.0039	0.09	0.0042		0.039	.014
Trichloroethylene			0.0077					0.17		
Vinyl Chloride			0.024			0.018		0.0091	0.0048	
1.1-Dichloroethylene			0.0038					0.025		
Ethylbenzene								0.026		
Dichlorodiflouromethane										
1.2-Dichloroethene										
1.1-Dichloroethene										
Trichloroethene										

* - construction mishap caused small spill directly into sampling intake

WASTE WATER SAMPLING PROGRAM - CITY OF BRENTWOOD
KENNON SITE - EXCAVATION SAMPLES
All Results in Milligrams per Liter

PARAMETER	EXCAV. 4-19-91	EXCAV. 4-29-91	EXCAV. 5-3-91	EXCAV. 5-9-91	EXCAV. 5-16-91	EXCAV. 8-23-91	EXCAV. 8-21-91	EXCAV. 10-25-91
Ammonia Nitrogen Dist.								
BOD								
Hexavalent Chromium								
COD	49.5							
T. Cyanide								
Oil & Grease								
TSS	58.7							
Cadmium								
Chromium								
Copper								
Lead								
Nickel	0.03							
Silver								
Zinc	0.022							
Arsenic								
Selenium								
Mercury								
Priority Poll. VOC								
Dichlorobromomethane								
Chloroethane								.0038J
1,1-Dichloroethane	.003	.0049	.0043	.0076	.019	.006		
1,2-Dichloroethane							.0025J	.0067J
Tetrachloroethylene								
1,1,1-Trichloroethane	.0038	.0037	.0046	.0036	.010	.0054		
Benzene								
Methylene Chloride								
Toluene						.003		.0013J
1,2-Dichloroethylene	.0022	.0032	.0048	.0066	.017	.0054		
Trichloroethylene								
Vinyl Chloride								
1,1-Dichloroethylene								
Ethylbenzene								
Dichlorodifluoromethane								
1,2-Dichloroethene							.0036J	
1,1-Dichloroethene							.0062J	
Trichloroethene								

SITE SECURITY PROGRAM

SITE SECURITY PROGRAM
Kennon Site - Brentwood, Tennessee

Site security is described in two sections of the following report; Site Security - Source Control/Remediation (during the source control and remediation activities), and; Site Security - Soils Management/Bioremediation Activities (during the long-term soils management and bioremediation process).

Site Security - Source Control/Remediation Activities

The following security devices where utilized in conjunction with site security during the source control/remediation activities:

- An eight (8) foot high chain link fence was installed completely around the site as one of the first security activities. It has remained intact since that time, except for renovation and improvement to facilitate installation of gates, repair, etc.
- High density security lights, mounted on five telephone poles throughout the site, were installed to provide additional lighting for security purposes at night and at times when lighting was less than desired.
- The site access road was moved from exiting from the south end of the Kennon Farm to exit in the middle of the Kennon Farm at the existing railroad crossing. This move was accomplished to comply with a request from the City of Brentwood, but did allow additional site security since the road passed directly in front of the farm manager's home. Additional gate and locks were installed across the roadway directly in front of the farm managers home.
- A uniformed guard service was employed during all of the source control/remediation activities, with the security guard being stationed at the front gate of the site in front of the farm managers home. Traffic was limited to those contractors and deliveries necessary to site operations. Access was gained through radio communications with the site operations trailer. At nights and on weekends during the source control/remediation stage, (when activity was conducted on the site), a security guard was stationed in the site operation trailer to provide additional security.
- The electrical systems to the site, the floats that control the pumping mechanism in the lift station, and two underground storage tanks are monitored electronically by an alarm system with an automatic telephone dialer. In this twenty-four hour monitoring system, should the electricity fail or the censors indicate that the waste water control pumping system is not working accurately, then the automatic telephone dialer calls the offices of Mosely & Associates, Inc. every four minutes until corrective action is taken on the site.

Site Security - Soils Management/Bioremediation Activities:

The following activities will take place throughout the soils management/bioremediation phase of the site remediation program:

- The eight (8) foot high chain link fence with lock-secured gates will remain intact around the site until the site is de-listed by the Tennessee Department of Environment and Conservation.
- The high density security lights, mounted on the five telephone poles throughout the site, will remain active during dark hours until such time as the Tennessee Department of Environment and Conservation agrees that they may be disconnected.

- The site access road will remain in the location utilized during the source control activities, through the middle of the farm. It will continue to exit directly in front of the farm managers home, to provide additional security for the site. Dual locks will remain on the farm gate in front of the farm managers home, to allow entrance to the site access road to the farm manager, Mosely & Associates, Inc. personnel, or the Tennessee Department of Environment and Conservation
- The site electrical/pumping system alarm mechanism will continue to operate until the site is de-listed by the Tennessee Department of Environment and Conservation. Should the electricity be interrupted at the site, or should the sensors located in the lift station, electrical panels or underground storage tanks detect that the water flow control program is not working satisfactorily, the office of Mosely & Associates, Inc, in Nashville, Tennessee will be called by the automatic telephone calling system every four minutes until personnel arrive at the site to correct the situation. It should be emphasized that there is at least four to six weeks of groundwater holding capacity on the site itself, even in times of heavy rain, in the event that the system fails to function properly. Temporary situations such as electrical outages during storms, etc. are usually self-corrected within a matter of minutes.

Emergency Personnel Listing:

The following personnel have been designated and properly trained for emergency purposes to accomplish any emergency actions that may occur on the site itself:

INITIAL CONTACT FOR ALL EMERGENCIES AND OVERALL RESPONSIBILITY:	**DAY TIME TELEPHONE**	**EMERGENCY TELEPHONE**
Ralph Mosely, President Mosely & Associates, Inc.	615-399-1016	615-664-1813
David Johnson, Sr. Consultant Mosely & Associates, Inc.	615-399-1016	615-664-1813
ELECTRICAL AND MECHANICAL PROBLEMS AND PUMPING SYSTEM:		
Roy Gregory/John Ray Genesco Inc.	615-367-8222	615-367-7701
TENNESSEE OF DEPARTMENT ENVIRONMENT AND CONSERVATION - NASHVILLE FIELD OFFICE:		
Brenda Apple	615-741-5940	1-800-251-3479